The Newspaper of Information Systems Management
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COMPUTERWORLD

IBM hosts downsize via objects

By Ed Scannell

IBM has devised what appears to be a cohesive plan for allowing information systems shops to better tie legacy mainframes to the rest of the enterprise through a variety of micro-based object technologies.

Some see the plan to support IBM mainframe-class software with a number of PC-based object-oriented technologies as long overdue. The effort will help users make their existing mainframe applications work better in client/server environments across multiple platforms.

Retooled for MVS

Last week, company officials announced they will adapt C++ and Smalltalk, as well as IBM's own System Object Model and Distributed System Object Model, to work with mission-critical applications developed under the MVS operating system.

"We haven't heard all the specifics about this yet, but all this makes sense," said Ronan McGrath, vice president of IS and accounting at Canadian National

IBM, *page 12*

Merger piques user interest

Wellfleet/SynOptics nuptials would combine router/switching into single device

By Stephen P. Kleit Jr.

The proposed $1.03 billion merger of networking behemoths Wellfleet Communications, Inc. and SynOptics Communications, Inc. sent shock waves through the industry last week. It may further weaken user confidence in an already shaky market.

Users confused by a plethora of LAN switching and Asynchronous Transfer Mode, or ATM, migration strategies as well as the convergence of hub and routing technologies [CW, March 7] were left pondering what effect the merger might have on their current and future networks.

"I'm not sure yet if this is a good thing. A lot depends on the product packaging and how open management is," said John Kruk, officer of telecommunications at the U.S. headquarters of Sun Life Assurance Co. in Wellesley, Mass.

"I'm definitely concerned about

Merger, *page 16*

A COMBINED WELLFLEET/SYNOPTICS WOULD HAVE:

- ▶ REVENUE IN EXCESS OF $1 BILLION
- ▶ 3,000 EMPLOYEES
- ▶ 110 OFFICES WORLDWIDE
- ▶ 700 FIELD SALES/SUPPORT PEOPLE

Net results

Out of 209 networking users surveyed, 74 said the Wellfleet/SynOptics merger was a positive move for the following reasons:

◆ More competitive product offerings	49%
◆ One-stop shopping for internetworking equipment	43%
◆ Choices beyond dealing with small vendors	8%

Source: *Computerworld* Database Division, Framingham, Mass.

Middleware gaps closing

By Elisabeth Horwitt

Message-oriented middleware vendors are preparing a slew of announcements that could give the technology the boost it needs to break into the corporate market mainstream, users and analysts said.

The first of these announcements, expected within a few weeks, is the formation of the Message-Oriented Middleware Association (see story page 14).

The second is a series of announcements from individual vendors that should address some of the biggest functional gaps in current products.

Some won't wait

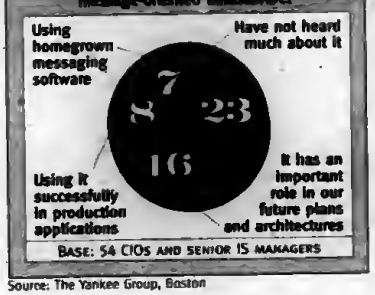
Already, a number of large manufacturers, service organizations and airlines have implemented message-oriented middleware as the basis for distributed applications that require sporadic but highly reliable communications among many heterogeneous systems.

Like its more familiar sibling — remote procedure call, or RPC-based middleware — message-oriented middleware is a software

Middleware, *page 14*

Going places

To what extent has your organization adopted message-oriented middleware?



BASE: 54 CIOs AND SENIOR IS MANAGERS

Source: The Yankee Group, Boston

So long, CC:Mail

IBM drops resale of product

By Lynda Radosevich

IBM is about to launch a solo flight into the crowded client/server messaging market, and its first move will be to stop marketing Lotus Development Corp.'s CC:Mail.

This fall, as part of a broader groupware strategy, IBM said it will conduct a major overhaul of its recently introduced UltiMail messaging client software and AnyMail server software.

The as-yet-unnamed product due is meant to address user needs for robust, scalable client/server messaging systems. It is also intended to tap IBM's experience in providing enterprise

CC:Mail, *page 121*

One Pulitzer last fall, an IS pro lived his nightmare: A virus brought his 2,500-user network to its knees. Here is the story of his battle. See In Depth, PAGE 98.

Millennium madness

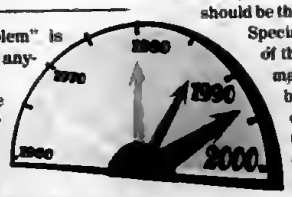
Desktops veer toward Year 2000 crisis

By Mitch Betts
NEW YORK

The "millennium problem" is not just for mainframes anymore.

What promises to be the biggest computer glitch of all time will not only affect legacy systems — which will falsely view the year 2000 as the year 1900 — but also impact client/server systems that will pull down corrupted data from the mainframe.

"Your help desk will be inundated on Jan. 1, 2000," predicted Warren Axelrod, senior vice president for corporate information systems at HSBC Securities, Inc. in New York. Actually, New Year's Day will fail on a Saturday, so the following Monday morning should be the real doozy.



Specialists have long been aware of the looming problem with old mainframes [CW, Sept. 6, 1993], but the prospect of glitches cascading down to the desktop was broached at the recent Millennium Maintenance Seminar in New York.

The basic problem is that the mainframe systems developed in the 1960s and 1970s used a two-digit field for the year to save memory space. In the year 2000, that will show up as 00, so any date-critical calculation in the application will be very, very wrong.

Millennium, *page 28*

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What's Inside

July 11, 1994

LEGACY SYSTEMS, LEGACY OPTIONS

Avery Dennison's Stuart Gulliver and other IS executives need to maintain legacy systems while developing new systems. They're doing it with the help of contractors and outsourcers. But when do you look outside, and when do you tap internal resources?
See Management, page 56.

Andy Lyngaas

NEWS

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Executive Briefing

No-frills carriers are bringing low-cost information technology strategies to the airline industry. Southwest Airlines, the only profitable major U.S. carrier, budgeted $21 million on IS in 1994, while American Airlines spent $1.04 billion. The no-frills airlines lower costs by keeping business processes and technology simple, minimizing infrastructure investments and avoiding costly reservation systems. *Page 81*

The proposed merger of Wellfleet and SynOptics sent shock waves through the industry as analysts and users grappled with long-term implications. Some doubted whether the merger could even be pulled off. The combined Wellfleet/SynOptics entity will produce a device that joins router/switching functions in one box. No one currently offers such a product, and user interest is high. The merger also scored a hit with users because it promises to let them do all their network shopping under one roof. *Page 1*

Software glitches in the year 2000 will cascade from legacy systems to desktop PCs that get their data from the mainframe server. What promises to be the biggest computer glitch of all time will not only affect legacy systems — which will falsely view the year 2000 as the year 1900 — but also impact client/server systems that pull down corrupted data from the mainframe. While no magic technical fix for the problem exists, there are a few software tools available to help IS departments identify the date-critical lines of code and estimate the cost of conversion. *Page 1*

Hewlett-Packard users are still paying a price for HP's computer industry successes; the company has yet to resolve its order-fulfillment hugaboos. Despite HP's ongoing efforts to overhaul an ancient, overburdened order-fulfillment system, products are often still arriving late or improperly configured. *Page 15*

Early adopters of commercial parallel processing systems, including The Chase Manhattan Bank NA and U.S. Bancorp, have already derived technical and financial benefits from using webs of intertwined microprocessors to crunch numbers on customer information patterns. However, skeptics continue to claim the nascent market is still long on vendor trumpeting and short on widely available commercial applications. *Page 24*

The 5th Wave *by* Rich Tennant

"It's no use, Captain. The only way we'll crack this case is to get into Prof. Duncan's personal computer file. But no one knows the password. Kilroy's got a hunch it starts with an 'S', but heck, that could be anything."

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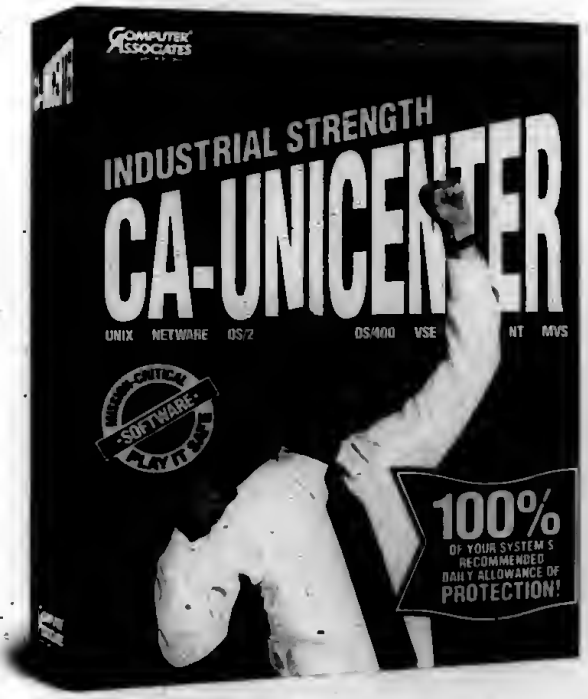

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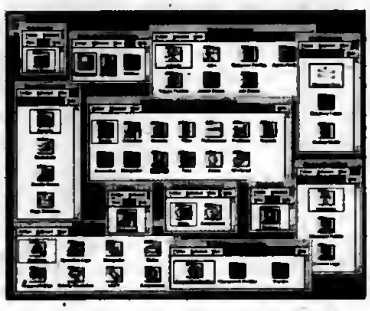

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Mainframe software pricing scales down

By Craig Stedman

■ Faced with user demand for lower and more flexible pricing, some mainframe software vendors are stepping up to the plate and emulating the linear pricing model that IBM announced in April for parallel System/390 complexes.

Boole & Babbage, Inc., for example, is quietly starting to offer Parallel Sysplex pricing as a substitute for traditional-tiered licenses (see chart). The maker of systems management and automation software said it plans to formally list the new prices in the fourth quarter, after a test period.

Software AG of North America also said it is working on sysplex pricing for introduction in the next 12 months, along with parallel versions of its Adabas database and other mainframe products.

Industry sources said Legent Corp. is discussing a plan that could expand upon IBM's move by setting up a single software pricing model for parallel and nonparallel installations. That would have wider usefulness than parallel-only approaches because analysts expect just a small number of mainframe shops to implement sysplexes during 1994 and 1995.

Users said improvements in mainframe software pricing are long overdue.

"I get murdered now" on software costs, particularly when processor upgrades bump a system up into a higher software pricing tier, said Al Pomerantz, vice president of technical services at General Accident Insurance of America in Philadelphia.

New math

Examples of Boole & Babbage's planned Parallel Sysplex pricing for its CMF Monitor software compared with traditional tiered costs

Mainframe combination	Sysplex price	Tiered price*
ES/9000 822 and 982	$66,176	$74,000
ES/9000 942 and 982	$72,160	$84,600
Dual ES/9000 982	$82,368	$84,600

*Includes 50% discount on license for second machine

General Accident wanted to upgrade to an IBM 3090 600J recently but settled for the slower 500J to avoid increased software payments that would have exceeded the cost of going to the 600J. Even with the 500J, "I'm having to go back to management for a lot of unbudgeted money for no benefit that they can see" since the software itself is not being upgraded in any way, Pomerantz noted.

The new pricing by IBM and Boole & Babbage counts mainframes tied together in a data-sharing sysplex as a single system, letting customers take advantage of price breaks built in as capacity levels increase. Savings of 10% to 30% are likely, according to analysts. The straighter pricing curves also should make the cost of upgrading to more powerful processors less of a budget-buster than upgrading with tiered pricing.

Outside of IBM, mainframe software "is probably the most overpriced commodity in the computer industry right now," said Paul Quade, director of capital planning and resource management at Galileo International, an on-line reservation consortium in Englewood, Colo.

"You get into making hardware decisions based on software costs, and it shouldn't be that way," Quade added. Galileo recently paid more than $400,000 for rights to move its software to a faster Amdahl Corp. mainframe, increasing the cost of the upgrade by 10% over the hardware price, he said.

Mike Egan, an analyst at Meta Group, Inc.'s Burlingame, Calif., office, said he expects most vendors, "especially Legent, to informally implement improved pricing in competitive situations" by the end of this year as a "test-drive" approach to the issue.

Legent officials denied that the company plans to announce any pricing revisions in the near future.

Digital puts part of storage unit on selling block

Users question wisdom of latest move

By Mary Brandel

Digital Equipment Corp. confirmed last week that it is negotiating with Quantum Corp. to sell a chunk of its storage unit.

But while observers could quickly name the benefits of a potential sale — an influx of cash and reduced head count — some Digital customers saw the possible move as one that will sap the company of a core strength.

"Does this represent yet another major step in the dismantling of Digital?" wondered Tony Carrato, a principal consultant at Mile High Information Services, Inc. in Denver. "It seems to be selling a strength rather than shedding a weakness."

Digital, in pieces

In April, PaineWebber placed the following estimates on what it called Digital's significant assets

Maintenance	
Revenue	$4.6B
Value	$3.1B
Three semiconductor plants	
Revenue	NA*
Value	$1.3B
PC	
Revenue	$1B
Value	$400M
Storage	
Revenue	$1B
Value	$600M

*Not available

Users ask why

"As a hardware vendor, [it would mean] they can't offer the total picture anymore," said Matt Holdrege, a senior network specialist at PacifiCare Health Systems, Inc., a health maintenance organization in Cypress, Calif. "The core of DEC is selling VAX or Alpha along with memory, controllers and disk. If they're taking that out, I'm confused as to what their strategy is."

In a press release issued last week, Digital said it was discussing the sale of its magnetic disk, Digital Linear Tape drives, solid-state drives and thin-film heads businesses. Its storage subsystems, including StorageWorks, and its video and interactive information services businesses were not part of the talks, Digital said.

The move would divest Digital of an estimated 4,000 employees, and the rumored bid is $400 million. That kind of cash is sorely needed at Digital, analysts said. "I find it interesting that they're selling off the profitable pieces of the business, and I wonder what will be left," said Ed Homko, systems manager at Dr Pepper Co./The Seven-Up Co. in Dallas.

Not everyone was negative about the potential sale, however.

"They're keeping the two pieces with value-add and getting rid of a commodity and making money in the process," said Bob Sakakeeney, an analyst at Aberdeen Group in Boston. "If Digital were in better shape, it would be perceived better."

In fact, some customers wondered what Digital was doing with storage in the first place.

"Mass-produced peripherals is not differentiating for them," said Charles Smart, vice president of group technology at Citibank Private Bank in New York. Smart said he would be more concerned if Digital were to sell something such as its professional services group.

Possible contenders

Reports have surfaced — in *Computerworld* [CW, June 6] and in *The Wall Street Journal* last week — that various companies such as AT&T Corp and Computer Sciences Corp. are interested in the professional services portion of Digital's business.

Regardless of what gets sold, the confirmation of the talks "gives you evidence that Digital has some ability to change," said Richard Buchanan, an analyst at Forrester Research, Inc. in Cambridge, Mass. "The real evidence, of course, will be whether these things actually go through."

The announced negotiations with Quantum — and other pending deals that may be revealed this month — could be intended to put a positive spin on Digital's expected poor fourth-quarter results, which will be announced July 26, said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass.

> "As a hardware vendor, [it would mean] they can't offer the total picture anymore," said Matt Holdrege, a senior network specialist at PacifiCare Health Systems in Cypress, Calif.

Most analysts are projecting a fourth-quarter loss of 92 cents to $1 per share and an annual loss of $3 to $3.50. Fiscal-year revenue is forecast at roughly $13 billion.

However, most customers are looking not for piecemeal announcements but "a 15-minute speech on what Digital will look like in the future," Buchanan said. "The worst-case scenario would be that [such a vision] simply doesn't emerge, that we just hear isolated tactical changes," he continued. "If that happens, I'm not sure they'll survive."

DEC weighs software unit sales. See page 68.

Corrections

Due to a reporting error, a story on Silicon Graphics, Inc. [CW, July 4] should have said SGI's demonstration used an array of 10 Challenge machines, each of which had 20 Mips Technologies, Inc. 150-MHz R4400 RISC chips.

Due to an editing error, Metricom, Inc.'s Ricochet MicroCellular Data Network was mislabeled in the story "Metricom talks up wide-area wireless WAN" [CW, June 20].

Due to an editing error, the headline "IBM adds EISA server to PS/2 family" [CW, June 20] should have been "IBM adds MCA server to PS/2 family."

Due to a printer's error, the wrong product photograph ran with the story "IBM's VisualAge turns language-neutral" [CW, June 27].

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AI gets smart: intelligent tools

Artificial intelligence was a casualty of its own hype in the 1980s. Trumped up as a rival to the human brain, it had a few triumphs and many failures. Inference engines, natural language interfaces and neural nets, written in LISP or Prologue, were misfits for existing environments.

Instead of disappearing, however, AI is undergoing a quiet transfer to a new domain as some of its techniques are adapted to mainstream software development. The hard-bitten survivors of that first, mid-1980s age of intelligence are applying their lessons to a second effort. Their smart, sophisticated tools point the way to the client/server tool sets of the future (while their authors try to avoid all reference to AI).

Examples include Intellicorp, Inc. (founded in 1984), Neuron Data, Inc. (1985), Inference Corp. (1983) and Trinzic Corp. (a 1992 merger of Aion Corp. and AICorp.). In each case, they are offering tools that combine some aspects of AI with an object-oriented development system.

The two fields have actually been related since their inception, with the AI world spawning "frame-based" development in the mid-1970s, an object-like approach, says Jim Odell, chief technology officer at Intellicorp in Mountain View, Calif. When AI and object-oriented methods are harnessed together, they allow high-level modeling of the business, something that is common to object-oriented programming languages and complex data handling techniques.

The hard-bitten survivors of that first, mid-1980s age of intelligence are applying their lessons to a second effort.

Charles Babcock

These firms range in revenue from $10 million to $30 million and together might equal the two youthful PC toolmakers, Powersoft Corp. (PowerBuilder) and Gupta Corp. (SQL Windows). But AI technologies go far beyond what we usually think of as advanced at the desktop. PowerBuilder uses objects in the underlying development system to build event-driven GUIs. AI-based tools do the same thing — often for multiple windowing environments — and also create objects as part of the application.

While the PC toolmakers attempt to interface their products with SQL databases, the born-again AI suppliers interface theirs with multiple data types — legacy databases, relational databases and object storage mechanisms.

Instead of being stuck with two-dimensional tables, the AI/object providers can model business entities and rules, combining both in their systems. Business, workflow and decision-support rules can be embedded much better with their rules-firing systems than with a scripting language or procedural language, says Chuck Williams, chief technology officer at Inference in El Segundo, Calif.

Ninety percent of the information business people want is not in the relational databases addressed by PC tools, he adds. It is in haphazardly organized letters, memos, customer orders and other documents. With AI-oriented search techniques, this information is available through sophisticated text searches or object accessing mechanisms invented by the AI/object vendors, such as Trinzic's ObjectPro.

The AI/object companies are bringing a higher level of abstraction to software development. The methods built into their applications are virtual methods, capable of being driven by current information from the end user rather than frozen at the moment of development. To accomplish this, they need both the structures of the object-oriented world and the techniques of the AI world.

"When artificial intelligence got started, there was no infrastructure for what these firms were trying to do," says Paul Harmon, editor of the "Intelligent Software Strategies" newsletter in San Francisco. Now, a client/server infrastructure is being built, and the AI firms "are figuring out where they can add intelligence," Harmon says.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

Novell/WordPerfect customers wary of support plan changes

By William Brandel

■ Just weeks after completing their merger, Novell, Inc. and WordPerfect Corp. officials this week will begin outlining a plan to integrate their polar opposite approaches to support.

The sooner the better, users said last week.

Customers are clamoring for a clear, explicit message on how the companies, with their completely different support models and reputations, will meld support for their combined product lines. Novell relies heavily on the dealer channel, while WordPerfect is renowned for a strong direct support organization.

Novell and WordPerfect officials will try to mollify their customers by focusing on the common strengths of the companies.

For example, Novell officials said they will expand their Corporate Account Program, which services premier users, to include WordPerfect. The two companies will also extend Novell's Certified NetWare Engineer program to include programs that will target technicians who support WordPerfect's Symmetry messaging application and PerfectOffice suite.

"They have to clarify exactly how it will work for us," said Frank DeVito, manager of information systems at Rogers & Wells, a law firm in New York.

DeVito said Rogers & Wells uses NetWare, WordPerfect word processors and WordPerfect's SoftSolutions document management program. He added that he was glad to hear Novell would offer extended service at a lower price to joint Novell/WordPerfect sites. "We would expect that to happen," DeVito said.

Losing ground

Particularly worried are WordPerfect users, who expressed concern that their formerly solid support would deteriorate under the new structure. Many Novell users, who express displeasure with the technical support they receive, said they want improved support from the vendor. For example, some users cited instances where they waited more than a week for Novell to return a support call.

"Let's just say their help desk is not very helpful," said Byron Head, a technical support manager at Bear, Stearns & Co. in New York. "Their answers are always too general, and they have no cross-technology knowledge. This has always been the case."

But until the specifics are laid out, users are skeptical about any new support plans.

"I basically at this point would be distrustful of Novell's user support regime," said H. Reid Hoadley, an IS manager at St. Josephs Hospital in Kirkwood, Mo. "It puts a lot of weight on the IS staff to support [NetWare], and it's a cost we don't normally factor in."

High numbers

The majority of Novell's 600 technical support people work with the Corporate Account Programs or NetWare 4.x users, said Dataquest analyst Jeff Kaplan. Novell also boasts tens of thousands of Certified NetWare Engineers who provide support. However, users and integrators must pay at least $5,000 for their personnel to become NetWare-certified.

Information culled from a recent Dataquest, Inc. survey indicates that support is the leading factor users consider when purchasing a network product.

In many ways, Novell has become a victim of its own success, said Jamie Lewis, president of the Burton Group, a consultancy in Salt Lake City. Because NetWare proliferated so quickly in the market and has grown so complex, Novell has struggled to create a structure that can support its users, he said.

Sticker shock

Technical support is increasingly becoming a budget buster. But it is not just users who are feeling the financial reality bite.

According to Dataquest Worldwide Services Group in Framingham, Mass., one-third of all networking budgets are absorbed by help desk calls alone. Gartner Group, Inc., a Stamford, Conn., consultancy, estimates that 86% of total PC software costs is labor-related. Among these costs, 50% is dedicated to support.

At the same time, as software becomes more complex, crosses more platforms and gets much cheaper, vendors can no longer afford to bundle in free support.

For example, in May, WordPerfect began charging its word processor users $25 per incident for its once free support calls — and $150 per incident for users of its Symmetry messaging product. Novell currently charges $250 per incident.

It also takes many people to support a product line. WordPerfect employs 850 people to handle support calls — about one-fifth of its employee base. Likewise, Lotus Development Corp. has more than 1,000 technical support employees, and Novell employs 600.

However, all the major software vendors are taking a page out of the user playbook, calling in outsourcing partners to handle support calls. Microsoft Corp. relies on Hewlett-Packard Co., AT&T Global Information Solutions, Digital Equipment Corp. and Corporate Software, Inc. to handle some of its support calls. And for more than a year, Bell Atlantic Business Systems Services in Malvern, Pa., has handled calls for Novell's NetWare 2.x and NetWare 3.x.

Soon, analysts expect that contractors will handle most support calls to vendors. This would free up vendors to focus on another key concern: developing software.

This thinking sits well with many users. While some customers balk at cost increases, other say they wouldn't mind paying more if higher prices translate into prompt, quality service.

— *William Brandel*

Sybase disputes report slamming System 10

By Kim S. Nash

Poor performance scalability on multiprocessing machines and in large database environments has stymied some Sybase, Inc. System 10 database users, according to a report released last week by Gartner Group, Inc.

Sybase officials promptly shot back at the Stamford, Conn., consultancy's report, calling it a "gross exaggeration," while still acknowledging the need to spruce up System 10's performance.

Shops looking to run databases larger than 50G bytes on boxes with more than four or eight processors "should revisit their plans and possibly extend time frames," Gartner Group advised. The report did not specify how many sites have had problems, but in an interview about the report, co-author Tony Percy said he talked to "dozens" of Sybase users.

In the shop

To address the glitches, Sybase must partially rewrite its System 10 SQL Server engine, somewhat like the rearchitecting that rival Oracle Corp. endured in a crossover from Oracle 6 to Oracle 7 from 1991 to 1993, the Gartner report said.

"A significant portion of the database kernel has to be reworked to handle scalability problems they have in a multiprocessing environment," said Percy, a senior software analyst at Gartner Group.

Percy predicted Sybase will not be able to ship a rearchitected product until late 1995 or early 1996.

While Sybase acknowledged that there is work to be done to improve performance, company officials took issue with the extent of the problems in the report.

"There are some algorithms we've identified that we can improve," said Berl Hartman, vice president of product marketing at Sybase. She declined to specify a time frame for delivery of planned improvements but noted, "A typical [database] product life cycle is 12 to 18 months so you can make some assumptions."

Further, SQL Server Version 10.01, a maintenance release shipping since May, fixed more than 300 bugs and other problems in Version 10, including support for more detailed log reports, Hartman added.

Key problems outlined in the Gartner Group study included the following:

- **Multiprocessing** — Database performance bogs down in applications using more than four processors. Some Gartner clients reported less than 50% scalability in some applications.
- **Support** — Recent additions of on-line services and more attentive support lines have helped, but technical service is allegedly expensive and uneven.
- **Growth** — Quick sales increases in the past few years reportedly have distracted Sybase managers. Fiscal first-quarter 1994 saw a 72% jump in sales compared with the same period last year.

Sybase executives maintained that the problems cited are not any worse than those facing other software firms but agreed that two key products are late. Sybase's Navigation Server add-on module for multiprocessing is due by the end of 1994 — a year late — and then only for AT&T Corp. 3600 machines. And Build Momentum, a graphical development tool, was due in March but now is slated for release at the end of this quarter.

"There are a couple of things ... that we should take a rap on the knuckles for," said David Peterschmidt, chief operating officer.

Regarding weak performance on multiprocessing hardware, Hartman said at least two Sybase beta users — financial firms Kwasha Lipton and The Chase Manhattan Bank NA — had "no problems" in early trials of Navigation Server.

But Ken Walpert, chief information officer at Kwasha in Fort Lee, N.J., said he will wait for a "more stable" version of Navigation Server before he goes live with it. "Until recently, I was the only one using it," he explained. "I'd like to see what some other people do with it before I go ahead."

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Access 2.0 hitting some snags

By Melinda-Carol Ballou

Microsoft Corp.'s Access 2.0 database appears to be causing corruption problems for certain users, according to a handful of developers who posted comments on CompuServe over the past month and interviews with other users.

Microsoft officials said most of Access' 1.5 million users are not experiencing these difficulties. But those who are having the problems said they occur randomly. The result is that frequently accessed data becomes corrupted or lost.

Also irritating to some is the fact that Access does not notify end users when data corruption has occurred. In those cases, users continue to enter data without knowing it has been corrupted. That work is then lost or rendered useless.

End users and systems professionals said they are not made aware of the problem until the database administrator performs a check on the database and finds it has been corrupted.

"For us, the data corruption is occurring on an average of every 1.8 days since we put in Access 2.0," said Victor Le Hotay, a consultant at CompuTrade Software Development, Inc., a Toronto firm that is developing a foreign exchange package. "Under Access 1.1, it failed more often." His company developed a Visual Basic application running in conjunction with the Access database and Microsoft's Windows for Workgroups.

"It seems to get corrupted in very bizarre ways, and we don't know it's been corrupted until we run a check on the program," Le Hotay added. "We are now trying to reproduce the problem for Microsoft so they can address it."

On the mark

The number of Access database users reached the 1 million mark last fall. Around 50,000 more copies have shipped since then, according to Microsoft officials.

Microsoft officials said anyone with Access problems should notify Microsoft support staff immediately.

"We take data corruption issues very seriously," said Livy Johnson, Microsoft's product manager for Access. "We want to isolate any problems people are having, whether it's related to Access or other systems configuration issues."

Developers at one New York firm also experienced problems running Access in conjunction with Windows for Workgroups.

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Gupta posts losses

By Melinda-Carol Ballou

Gupta Corp. last week announced a substantial and unexpected loss for its second quarter ended June 30. The company also said it is unlikely to post a profit in the third quarter.

Analysts attributed the second-quarter shortfall of about $7.5 million in part to the increased commoditization of the client/server tools market. The ongoing squeeze of Gupta's database business by large rivals such as Oracle Corp. also contributed to its financial woes, analysts said.

Gupta earned revenue of approximately $11.5 million this quarter vs. $13.5 million for the same period last year. Financial analysts had expected the company to report revenue of $17 million to $20 million to cover expenses of around $19 million.

Gupta said it had increased spending to cover the product introduction of SQL Windows 5.0 in June but that both domestic and international sales forces had struggled during that period.

Analysts said Gupta has spread itself too thin in several product directions and is under pressure in both the database and tools side of its business.

Gupta may be able to solidify its position with client/server tools depending on how clean SQL Windows 5 turns out to be. But a crowded tools market dominated by Powersoft Corp. could make that increasingly difficult.

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News Shorts

SCO quietly hikes high-end server prices

The **Santa Cruz Operation** (SCO) has raised prices for its high-end SCO Unix servers, effective July 1, without a formal announcement. SCO said it added two "user bands" to its former three-tier user pricing schedule, citing changes in the average size of SCO installations. Products now will be priced for groups of 2, 16, 32, 128 or 1,024 users. "If you've got 32 users or less, there's no change in price," explained Mike Shelton, director of product marketing. The product formerly cost $1,990 for 512 users; now it costs $3,890 for 128 users. The top-of-the-line price is $11,290 for a group of 1,024 users.

CIOs earn major league salaries

Total cash compensation for some chief information officers has reached the celebrity level of $1 million, according to a 1994 survey by Edward Perlin Associates, Inc. in New York. Base salaries for CIOs were unchanged from the 1993 survey, but bonuses were much higher, resulting in a 10% average growth in total compensation. Managers of network planning also fared well, with a hefty 19% increase in compensation.

ANSI to support info highway standards

The New York-based **American National Standards Institute** (ANSI) said it will create an information infrastructure Standards Panel to support rapid development of connectivity and interoperability standards for the so-called information superhighway. ANSI President Sergio Mazza said nationwide standards will be needed for cable TV-based networks and set-top boxes, for example. Separately, the Clinton administration released a draft report recommending an update of U.S. copyright laws. It said unauthorized electronic distribution of copyrighted material — such as on-line news articles — should be illegal.

KnowledgeWare expects Q4 loss

KnowledgeWare, Inc. expects to report a loss for its fourth quarter, ended June 30, with final results available in mid-August. The company attributed the loss to anticipated sales that did not close by June 30. As a result, the company plans to implement cost controls and restructure operations.

Tricord predicts loss, revenue shortfall

Tricord Systems, Inc., a manufacturer of enterprise servers in Plymouth, Minn., said second-quarter 1994 revenue will fall below analysts' expectations and likely result in a loss for the quarter. Revenue is expected to hit about $17 million. James D. Edwards, company president and chief executive officer, said the company will not meet its 1994 revenue and earnings expectations. He predicted 1994 revenue will be in the range of $90 million. The company attributed the low figures to a slow ramp-up of Microsoft Corp.'s Windows NT, which in turn negatively impacted sales for Sequent Computer Systems, Inc. The company also cited slow growth in the international server marketplace and increased competition.

SHORT TAKES **Teleport Communications Group** has installed 9,600 miles of fiber cable as part of a fiber-optic network that will connect business, education, health care and government institutions in San Diego to the information superhighway. ... Adams County, Colorado, has outsourced its computer operations to **Systems & Computer Technology Corp.** in Malvern, Pa., in a 7½-year pact valued at $7 million. ... A month after renaming WordPerfect Office as Symmetry, **WordPerfect Corp.** has changed the electronic messaging product's name to GroupWise to avoid legal challenges for use of the Symmetry name.

Warp speed ahead for OS/2

By Ed Scannell

While Microsoft Corp. continues to beat its marketing drum for Windows 4.0, IBM's Personal Software Products group is squeezing several new features into the next couple of versions of OS/2 to bolster the product's market position.

In the next beta version of OS/2 for Windows, code-named Warp, the company will include a "dashboard" feature and flashy three-dimensional icons that make it easier for users to tap into the full extent of the operating system's most powerful capabilities, according to developers who were briefed.

The company apparently will not stop there. In another version expected by the first half of next year, IBM plans to dramatically revamp the look and feel of OS/2's graphical Workplace Shell to better compete against the proposed document-centric interface that Microsoft plans for Windows 4.0 (also known as Chicago), a source within the company said. No details were available.

However, IBM reportedly has contracted out some of this interface work to a small developer that specializes in designing graphical interfaces, the source said.

"Microsoft has done a good job with Chicago [interface], but they haven't integrated all of its features the way [IBM plans to do] with OS/2. [IBM] has hired some very talented graphical designers to ensure this happens," said one source close to IBM.

Needs help

While many OS/2 users seem content with the look and feel of the Workplace Shell, some said many aspects could use some improvement.

"There are a lot of elements that could stand some redesign, especially things like the fonts dialog box, which suffers greatly compared to Adobe's Typeface for Windows," said Bob Holmes, a technical consultant at Southern California Gas Co. in Los Angeles.

Also in the next beta version of Warp, expected late this month, IBM will include support for Microsoft's Win32s application programming interface for the first time. This capability allows OS/2 to be placed directly on top of Microsoft's Windows for Workgroups 3.11 and take advantage of most workgroup features in that operating system.

The first version of OS/2 for Windows, released last November, worked only with Windows 3.1 and not with Windows for Workgroups.

Another feature IBM plans to include in Warp is a program that allows users to quickly access the information highway. This is in response to a similar capability, code-named Marvel, in Windows 4.0. Marvel is a subscription service that gives users easy access to a range of on-line services.

Warp will also include an installation procedure with more diagnostics information about hardware and software configurations.

Update: Microsoft's At Work. See page 39.

Sun, SGI fight for graphics station grip

Unix models tap commercial, technical apps

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

■ Sun Microsystems, Inc. and Silicon Graphics, Inc. (SGI) are training their sights on low-end graphics workstations with this week's introduction of Unix machines that tap technical and commercial applications.

Sun is taking steps to ensure its hold in the graphics workstation market, analysts said, even as rival SGI moves closer to selling its graphics workstations for commercial multimedia use.

Sun's low-cost workstation move bodes well for its longtime technical user sites, which have been demanding more graphics options. Sun has been "very smart about packaging and upgrades and offering the right feature sets for target markets," said Richard Fichera, a graphics consultant at D. H. Brown Associates, Inc. in Port Chester, N.Y.

The new SPARCstation 5 Model S24 combines 8- and 24-bit color graphics in a low-end model, priced from $6,595 to $11,400. The machine targets mechanical and electrical computer-aided design (CAD) users in Sun's traditional technical market. It can also be upgraded to a $12,000 SPARCstation 20, Sun said.

But the Model S24 can also pick up publishing documents generated on Macintosh machines and later add in high-resolution color graphics created on the Sun S24, Sun said.

Sun also announced several graphics accelerator options and an OEM reseller agreement with Evans & Sutherland in Salt Lake City to provide high-end, three-dimensional graphics accelerators, priced from $45,000 to $100,000.

Server challenge

SGI, renowned for its high-end graphics systems, is fielding a new low-end uniprocessor Challenge server in models priced from $12,250 to $16,600. The Challenge S can be used as a stand-alone file server or as a developer's workstation to build multimedia, CAD or database applications for use on Challenge symmetrical multiprocessing systems.

SGI also announced a $45,000 Challenge DM server for high-speed data transfer of multimedia and video applications.

HP unveils DCE tool kit

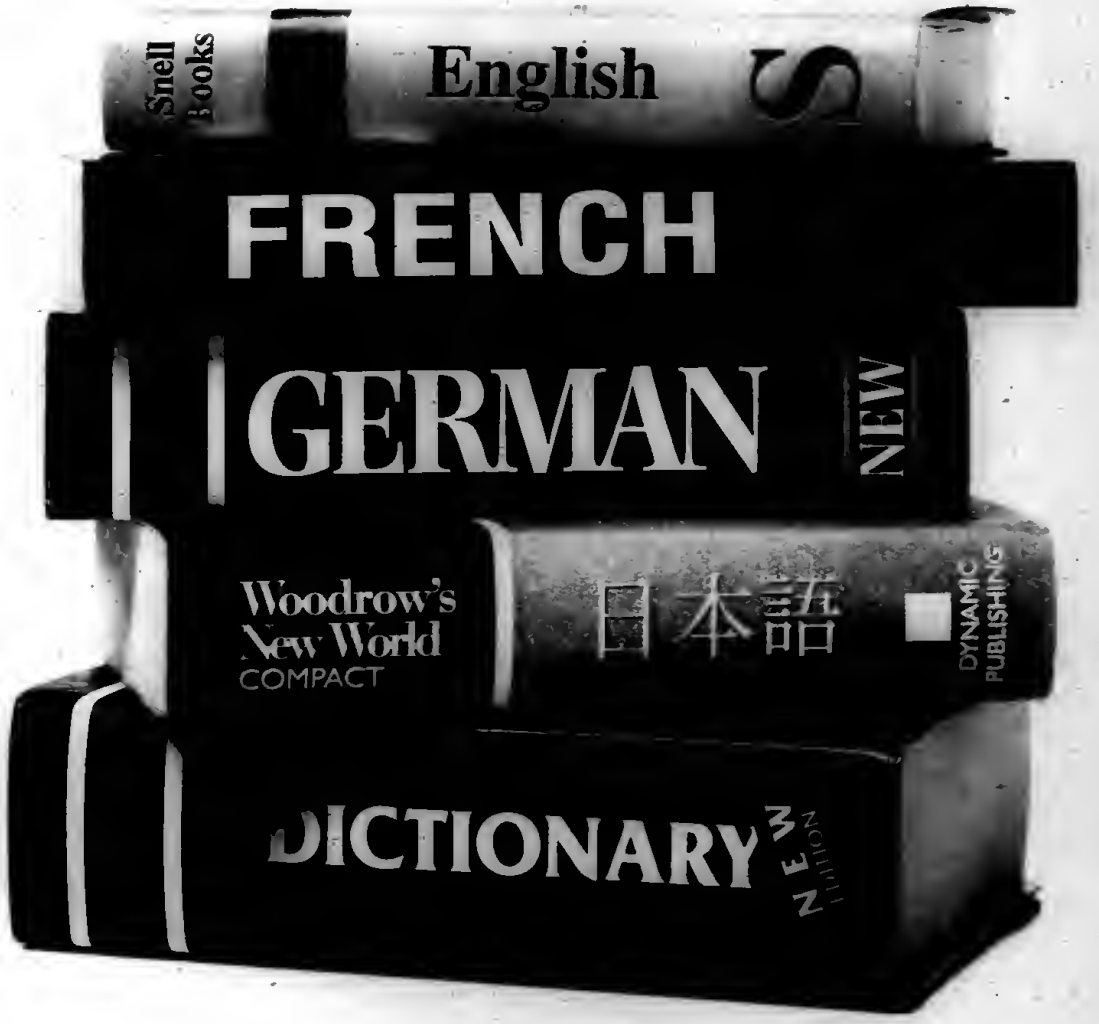
In an attempt to jump-start user interest in the Open Software Foundation's Distributed Computing Environment (DCE), Hewlett-Packard Co. last week announced a tool kit designed to speed programming by using predefined objects.

The product, Object-Oriented DCE/9000, is built on a C++ class library that includes about 20 predefined objects. "It helps make DCE approachable," said David Taylor, president of Enterprise Engines, Inc., a San Mateo, Calif., consultancy. "It's a bridge between the world of objects and the base of DCE applications."

By using predefined objects as building blocks, users avoid the complexities of writing to more than 400 DCE application programming interfaces, HP managers said. A starter kit costs $995; a set of documentation and technical manuals that many users can share costs $2,000.

One beta site, Mead Data Central in Dayton, Ohio, has been using Object-Oriented DCE/9000 since March, said David Skeen, a software developer. "We are creating subclasses that enforce all policies about the way we want our people to use DCE," he added.

—Jean S. Bozman



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IBM hosts downsize via objects

CONTINUED FROM PAGE 1

Railway in Montreal. The world of mainframes is not about to go away, although their role is changing radically. This [announcement] helps facilitate that" changing role.

IBM hopes to accomplish the following three goals with its strategy:

- Introduce more flexible technologies into mainframe environments.
- Build more fully distributed client/server applications.
- Supply improved systems management functions to better manage these distributed applications, according to Jim Archer, a director of object strategy at IBM.

"Now we think [users] can build mainframe applications in Smalltalk and execute or distribute them on any platform," Archer said.

Wooing users

Most users said they believe IBM's plan makes sense and that its object technology is solid. Some wondered, however, if the company has the marketing vigor and the savvy to persuade corporate users outside the shrinking base of solidly IBM shops to adopt technologies such as SOM and DSOM.

"There are only a small number of organizations that are taking IBM's strategy seriously. This technology is good, but it is not being widely adopted," said one IS professional at a large Midwestern bank who was briefed on IBM's plans. "Part of the problem for us has always been a lack of tools."

The IS professional, who asked to remain unnamed, said he will continue seriously evaluating Microsoft Corp.'s proposed solutions involving Windows NT and Object Linking and Embedding (OLE) until he feels IBM's technologies, particularly SOM and DSOM, gain greater acceptance.

Analysts agreed, but they also noted that users will have to spend a fair amount of time and money rearchitecting their host-based and desktop applications to accommodate the newer object-oriented technologies.

Out of the junkyard

Many users seem greatly relieved that IBM has finally come up with a way of rescuing thousands of mainframes otherwise destined to end up in the same place as the 1957 Ford Edsel.

"From a client/server viewpoint, this announcement makes the mainframe an effective server — which it hasn't been so far," said George McQuilken, president of Demeter International, Inc. in Marblehead, Mass.

Demeter International, together with the Center for Software Sciences at Northeastern University in Boston, has formed a research consortium that aims to apply IBM's recent announcements to solve what McQuilken perceives as the widespread problem of building user libraries of reusable code.

— Ed Scannell

"If what IBM is suggesting is that users rearchitect their applications — and then leave it up to them to do it — it's going to be a long, tough road," said Rich Finkelstein, president of database consultancy Performance Computing, Inc. in Chicago.

Finkelstein and others said IBM needs to back up technologies such as SOM and DSOM with exploitive applications of its own design. This is something Microsoft is practicing by pairing its OLE technology with compatible applications such as Word and Excel.

"Microsoft is building applications that use OLE. They are not leaving it up to someone else to finish the job, and users like that," Finkelstein said.

Climbing out of the money pit

Other users expressed a much higher degree of optimism about IBM's latest plans. They pointed out that many large IS shops are aggressively looking for ways to leverage the billions of dollars they have sunk into host-based and desktop hardware and software products.

"This is an enormous opportunity for us to do some sophisticated client/server stuff and off-load development to lower-cost platforms. Finally we see IBM's vision for what the future is supposed to look like," said Kevin Godin, a senior technical analyst at Canada Trust Mortgage in London, Ontario.

Last month, IBM officials sent a version of C++ that works with MVS to selected beta sites. The company hopes to ship a final version of the product by the end of this year or early next year.

Similarly, IBM will ship a beta version of Smalltalk for MVS in the same time frame, with the goal of shipping the final version sometime in the second half of 1995.

New versions of SOM and DSOM with built-in extensions that work with existing enterprise-class applications or allow for the creation of new enterprise-class applications should be in beta testing this year. The final version of those products will be incorporated into the next major release of OS/2 for Intel Corp.-based systems either late this year or early next year.

Into the future

The availability of application development tools and more general applications for IBM's SOM is critical if IBM's technology is to succeed, industry analysts said last week.

Although application support for SOM is lagging — fewer than 40 vendors have committed to SOM compared with 150 that are shipping for Microsoft's OLE — an array of tools for SOM is beginning to materialize. Tools companies that are shipping or are likely to ship support for SOM before the end of the year include Borland International, Inc., Symantec Corp., Powersoft, Inc.'s Watcom International subsidiary, Metaware, Inc., Easel Corp., ParcPlace Systems, Inc., Intelligent Environments, Inc. and Digitalk, Inc. Also, IBM's own VisualAge, SOMobjects Developer Toolkit and C Set ++ tools will also offer (or already do offer) support for SOM. — *Melinda-Carol Ballou*

Distributed computing

X/Open bridges naming spec gap

By Jean S. Bozman
MENLO PARK, CALIF.

The lack of a standard global naming service for all computer systems on enterprise networks remains a major stumbling block for distributed computing.

But last week's announcement of a federated naming service specification by the X/Open Co. should be a significant step toward unifying the way different computer systems name user addresses, data servers and data files by 1995, users at large sites agreed.

The University of Michigan's Ted Hanss: *'My guess is we will see actual product using XFN by the end of 1995'*

Tsvi Gal, vice president of information technology at Wells Fargo Bank NA in San Francisco, said a common naming service would be the key to allowing different types of distributed systems to ship data files to one another.

"When we move into a world where corporations will communicate over the information highway, really utilizing the Internet, then a common standard for naming will not just aid communications — it will be essential," Gal said.

On call

Like the telephone system, which allows any phone in the world to dial up any other, computers in global networks will seek unique file names as they navigate through a series of geographically scattered data servers.

Today, however, many of those client/server phone calls placed by distributed computers are not going to get through.

The Open Software Foundation's Distributed Computing Environment (DCE), for example, includes its own Cell Directory Service naming service. But it must be made to interoperate with other systems, such as SunSoft, Inc.'s ONC/NIS+, the Internet's Domain Naming Service and Open Systems Interconnect's X.500 naming system.

What X/Open has done is adopt a preliminary specification for the X/Open Federated Naming Service (XFN), which will allow users to splice multiple naming sequences into one global naming system. Because they are combinations of shorter names, individual names could get very long — more than 80 characters in some cases.

If widely adopted by systems vendors, XFN's application programming interfaces would unlock access across many types of global networks, users said. Until XFN support ships in products, users must use database gateways and craft custom work-arounds to link different directories and electronic-mail systems.

Even so, developing XFN-compatible applications may take time. "If the new standard will require me to make a major change to some naming standard I have today, then it's going to be a while before I jump onto the new standard bandwagon," Gal said.

A final XFN specification is expected in about one year following a review and testing period, said Petr Janecek, manager of Common Application Environment (CAE) development at X/Open headquarters in Reading, England. XFN would become one of several X/Open CAE standards covering such areas as data management, interoperability, document interchange and file transfer.

The OSF plans to support XFN in its upcoming DCE 1.2 release, which is due out in late 1995. Systems vendors that worked on X/Open's XFN project include IBM, Hewlett-Packard Co., Digital Equipment Corp., Sun Microsystems, Inc.'s SunSoft subsidiary and Siemens/Nixdorf Informationssysteme AG. X/Open is also encouraging independent software vendors to write XFN-compatible applications and report back about any bugs or problems.

"My guess is we will see actual product using XFN by the end of calendar year 1995," said Ted Hanss, chairman of the OSF's end-user steering committee and director of the University of Michigan's Center for Information Technology Integration. "Some of this is just a way to try and bridge the DCE and ONC camps. Partly, it's motivated by the vendors who have a foot in both camps and who want to make sure they can leverage both." Most likely, no one naming service will prevail, he added.

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Internet growth fuels protocol revamp

By Suruchi Mohan

The runaway growth of the Internet is setting fire to the back-burner issue of the Internet Protocol (IP), a crucial networking standard that is due for a major revamp.

The steering committee of the Internet Engineering Task Force (IETF) last week began reviewing recommendations for the next generation of IP, which takes center stage at the standards body's conference in Toronto later this month.

Called IPNG, for IP Next Generation, the new protocol will attempt to improve the existing protocol in an effort to meet the challenge of an ever-growing Internet.

No change for users

"The ultimate end user is probably not going to see IPNG because administrators and the network will have to transition" to the new protocol, said Dick desJardins, network manager at NASA's Goddard Space Flight Center in Greenbelt, Md. "All IPNG will interoperate with the current IP" so users will not be able to tell the difference.

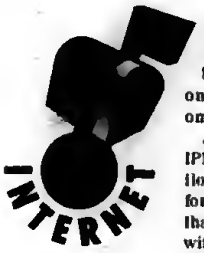
But the main impact of this next generation of IP will be felt most keenly by network administrators. They will notice expanded addressing space, a framework to address security issues, support for Dynamic Host Control Protocol — which allows a server to configure TCP/IP or workstations automatically — and transition tools to move from IP Version 4, or the current version of IP, to IPNG.

"If IPNG gives us lots of addresses that we manage ourselves, I've gained a lot of independence to run my network the way I want," said Bob Maskowitz, a software support specialist at Chrysler Corp. in Detroit and a strong advocate of IP user issues. "IPNG will give us enough addresses so that we can have all the public addresses we want."

Paul Mockapetris, chairman of the IETF and director of high performance computer communications at the University of Southern California in Los Angeles, said, "IPNG will make a system easier to install and configure. People won't have to know all the technical details."

Although security on the Internet still has a long way to go, administrators said they are relieved that the task force is at least beginning to address the matter.

"Security is a big issue," said Russ Smith, manager of Unix and local- and wide-area network administration at the Texas Rehabilitation Commission in Austin, Texas. "We have a lot of secure data that needs to go on the 'net, and it gives people heartburn to think of unencrypted data running on the 'net."



Clash of viewpoints

Addressing is a very contentious issue, according to Noel Chiappa, an independent researcher in Yorktown, Va. The radicals want the creation of a new address field, whereas the conservatives want merely to extend the existing fields.

The IETF is preparing for an explosion of multimedia traffic on the 'net by recommending that the User Datagram Protocol be made more reliable, said Allison Mankin, one of the two area directors who made the recommendations.

Another boon administrators will enjoy with IPNG will be the ability to do resource reservation. IP Version 4 does not reserve bandwidth for transaction processing-type applications that require guaranteed bandwidth, Maskowitz said. "There's enough out there to make IPNG worth our while."

In for a change

Even if the recommendations are rejected by the IETF, vendors might still adopt them in their products, thereby passing along some benefits to users.

"Whether or not the IETF comes to a consensus, vendors will adopt [the recommendations] and make it a de facto standard," said Dan Lynch, chairman and founder of interop in Foster City, Calif. "Microsoft will ship 40 million copies of Chicago and make IPNG a de facto standard."

Although Mankin said "we are not ready to say if we will have a proposed standard for the IPNG but hope to have some pieces," desJardins expects a draft standard in two years.

Middleware

CONTINUED FROM PAGE 1

layer that manages communications among applications on distributed, heterogeneous systems.

The difference between RPC-based and message-oriented middleware is that RPC transactions require communicating systems to be on-line, while message-oriented middleware delivers transmissions to a queue, where they wait for the recipient to pick them up.

Good for speed, reliability

This makes message-oriented middleware less suitable for closely coupled distributed processing. But it works for applications where many systems must exchange data sporadically but quickly and reliably, users and analysts said.

For example, a platform based on Momentum Software Corp.'s Message Express will enable Converse, Inc. to update its warehouse database "immediately, on the fly, with guaranteed delivery of data" about high-priority customer orders, said Bob Castellucci, lead software specialist at the North Reading, Mass., company.

And a system based on IBM's Message Queue Interface will allow the Chicago Mercantile Exchange to enter stock-floor transactions into its system as the data comes in from clearinghouses. The alternative is to wait for batch updates every half hour or so, said Steve Goldman, manager of technical planning at the stock exchange.

The Chicago exchange did not choose a synchronous RPC-based mechanism because "we don't want our response time to be related to [the clearinghouse's rate of] processing or theirs to depend on ours," Goldman explained. "We just want it guaranteed that data gets from one place to another."

Message-oriented middleware sales are expected to take off exponentially in about 18 months, said John Mann, a senior analyst at The Yankee Group in Boston.

Several users expressed a strong desire for vendors to unite and produce some common standards for their highly proprietary systems. Some customers said they want common application programming interfaces that would give users and applications an escape hatch if the vendor goes out of business.

Still other users said they want standards to enable their message-oriented systems to communicate with business partners. Such is the case with Shared Medical Systems in Malvern, Pa., which is using Covia Technologies' Communications Integrator as the basis for its Health Data Exchange system.

The system coordinates payments, insurance verifications and other transactions for health care insurers and providers. "Right now, no standards exist" for tying the Covia-based platform to the systems of customers, said Don Bechtel, manager of development for the exchange system.

Indeed, the need for standards-based services for managing, troubleshooting and controlling access across different message-oriented middleware systems is a high user priority.

"I'd like to see the health [of the messaging system] at a glance: here's what's going on, what accounts are active or not active," Goldman said.

From the vendor corner ...

Among the upcoming vendor announcements that are expected in the next few months are the following:

- IBM will announce Distributed Computing Environment (DCE) support for MQ Series. Even more hopeful, the Message-Oriented Middleware Association is going to look at adopting underlying DCE services, including directory, security and management, as a standard.
- IBM, Momentum Software and Galileo International subsidiary Covia Technologies are planning to announce agreements with major PC-based application development vendors such as Powersoft Corp. to facilitate development of middleware-based applications.
- Momentum Software is expected within the next few weeks to announce a version of its Message Express that will support asynchronous dial-up connections, particularly targeting laptop users.
- Covia Technologies is incorporating NotLabs, Inc.'s Dimons third-generation platform into its Communications Integrator, enabling applications based on the Integrator to be managed by leading Simple Network Management Protocol-based platforms.

Messaging group finds a home

After a year's worth of discussions among the seven founding members of the Message-Oriented Middleware Association, the vendor consortium agreed to work first on defining common terms and definitions and then educate users on how the technology fits into its long-term strategies.

The founders include IBM, Digital Equipment Corp., Covia Technologies, Systems Strategies, Inc., Apertus Technologies, Inc., Momentum Software and Peerlogic, Inc.

The association will aggressively recruit other vendor and user members in order to start an industrywide discussion on what added functionality is needed for message-oriented middleware to win widespread user acceptance.

Yet it is still unclear whether the new association will be able to come up with standardized — rather than proprietary — offerings in areas such as systems management, security, user account management and message prioritization.

One possibility, which companies such as IBM said they were open to, is implementation of message-oriented middleware on top of the Open Software Foundation's DCE services, including security and directory.

An added benefit for users would be the potential to provide those same DCE services across their RPC-based and message-oriented middleware systems.

— Elisabeth Horwitt

Order system still bugs HP customers

By Mark Halper

Longs Drug Stores, Inc.'s Bill Gates was surprised earlier this year when he loaded Hewlett-Packard Co. software at corporate headquarters in Walnut Creek, Calif., and discovered that HP had errantly sent him a European version of the Distributed Computing Environment program.

"I thought California was in the U.S.," mused the director of technology planning at the $2.47 billion drug store.

Gates' delivery glitch was typical of the price that many HP users are paying for the company's computer industry success: Despite HP's ongoing best efforts to overhaul an ancient, overburdened order-fulfillment system, products often still arrive either late or improperly configured.

Problem child

Furthermore, users continue to cope with a convoluted order process that requires tedious forms subject to misinterpretation and given to annoying rigidity.

A better deal

Small to mid-size HP customers have double motivation to buy through VARs: Besides having an easier time ordering, they get better prices because VARs qualify for higher volume discounts.

"They don't really seem to have a handle on the inner workings of the order process," said Dave Brolsma, manager of information systems at EWD L.L.C., an El Paso, Texas, manufacturer of automotive wiring harnesses.

Brolsma recalled a recent episode in which he had to resubmit an order for five diskless PCs because he failed to also order a copy of Walker Richer & Quinn's terminal emulation software, as HP's ordering rules required.

"Instead of adding [the emulation software] to the order, we had to cancel the order and start all over again, which put us way back in the queue," he said.

How am I doing?

HP is well aware of its order-fulfillment hugaboos. Chairman Lew Platt told an HP user group conference last fall that fixing the order-fulfillment process is one of his Top 3 goals [CW, Sept. 27, 1993]. Then, Platt conceded that tending to this issue had proved to be a much larger challenge than HP had anticipated.

Last week, an HP spokeswoman said, "We do have a ways to go. We feel we're continuing to make progress." Dick Love, HP's vice president of computer order fulfillment and manufacturing, was on vacation and unavailable for an interview, the spokeswoman said.

Love is scheduled to issue a progress report at the Interex HP user group conference in Denver in September, she said.

Some users noted they have noticed improvements. "They're putting quite a hit of effort into it. It has improved over the last year," Gates said.

Nonetheless, Gates noted, "It's still difficult to track orders and that kind of thing. Quotes take a lot of time, and particularly in software areas you'll get wrong versions of software shipped, especially on the Unix side."

HP's ordering and delivery difficulties are one reason Camelot Music, Inc. in Canton, Ohio, buys products through a Cleveland-based value-added reseller (VAR), Infoworld.

"I find it's easier to order, takes less documentation, we're better informed of our order status, and we're always notified before equipment arrives that it's arriving," said Jim Sage, vice president of IS at the music store chain.

Sage reflected on HP's challenge. "They've just exploded over the last five years, and I'm sure all their infrastructure is being stressed," he said.

Out of reach is out of style, thanks to the new CELLect 14.4 wireless/wireline data and fax modems from UDS. These PCMCIA devices put any palmtop, laptop or notebook computer into the communications loop, whether or not a telephone line is available.

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Users tiptoe into wireless waters

Cellular protocol testing may spur more interest

By Michael Fitzgerald

While vendors backing the Cellular Digital Packet Data (CDPD) protocol are preparing to conduct key interoperability tests of the technology starting Aug. 1, most users still seem reluctant to figure wireless communications into their wide-area networking plans.

"With land lines as capable as they are, you have to ask the question, 'Why am I going wireless?'" said David Pinkard, a technical consultant at Mallinckrodt Medical, Inc. in St. Louis.

Pinkard said remote vertical applications such as those that United Parcel Service, Inc.'s drivers use make business sense, but "that is a whole different kind of wireless than most people are thinking of."

Faster packets, broader range

Still, CDPD is seen as the most promising near-term wireless communications method for both practical and technological reasons. On the practical side, CDPD leverages the existing cellular network to offer users broader geographic coverage than packet-based wireless networks such as Advanced Radio Data Information Services (ARDIS).

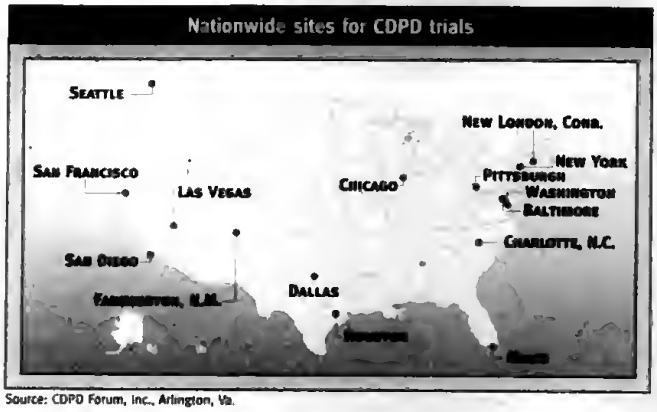
Technologically, packet networks are faster and more efficient for data transfer than circuit-switching cellular networks. For instance, packet networks do not force users to reestablish connections lost during transmission as circuit-switched networks do.

But wireless technology is more expensive and offers lower throughput than telephone wires. Users said that as more and more hotels and even pay phones gain standard data jacks for modems, the advantages of wireless become less clearly defined.

In the case of CDPD, issues of interoperability and billing that cellular phone users have raised must also be addressed. And the technology, while generally considered stable, is untried in commercial marketplaces.

For instance, McCaw Cellular Communications, Inc. last week sent out a press release trumpeting Federal Express Corp. as the first commercial CDPD user, centered on McCaw cellular towers in two cities. But a Fedex spokesman called the company's foray into CDPD "an experiment" and declined further comment.

The spokesman did say that one drawback for Fedex is the limited number of cities currently covered by CDPD (see map). A McCaw spokesman blamed suppliers of CDPD radio transmitters and bay stations for causing delays in deployment. Fedex currently uses its own radio-frequency network to exchange information with its trucks.



Source: CDPD Forum, Inc., Arlington, Va.

Even though a limited number of cities have CDPD capabilities right now, CDPD users can send and receive information as long as they are within a CDPD cellular region.

Roam if you want to

What is not clear is whether CDPD users will be able to "roam" or send and receive information when outside of their home cellular region. The signal generally must go through a regional cellular vendor, a long-distance land-line carrier and then the local phone company or the cellular vendor in a different region.

"Our big bugaboo about CDPD is roaming, and until they convince me that this isn't a problem, I think it's a problem," said John Woods, PC systems specialist at Chevron Information Technology Co. in San Ramon, Calif. Roaming is part of the interoperability testing that CDPD vendors will begin Aug. 1.

Despite user concerns, CDPD appears to be the wireless technology closest to establishing itself nationwide. CDPD will be up and running in 60 major markets by early next year and possibly before year's end, according to Charles Parrish, general manager of mobile data services at GTE Corp. in Atlanta.

But Roberta Wiggins, an analyst at the Yankee Group in Boston, pointed out that 60 service areas is less than what vendors promised earlier; furthermore, she expects to see only 25 cities with CDPD service in place by early next year.

Wiggins added that she does not expect to see the market accelerate until late 1995 at the earliest.

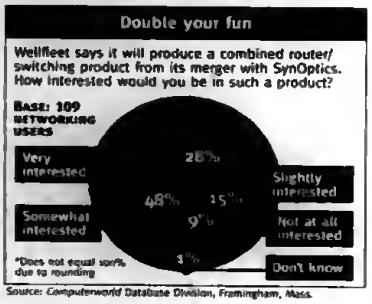
"The market is definitely evolving, but there's still a lot of work to be done," she said, citing infrastructure reasons.

Merger

CONTINUED FROM PAGE 1

what it means for Wellfleet's other relationships as well. These are critical issues for everyone with either/or but not both vendors' equipment," he said.

The combined Wellfleet/SynOptics entity will produce a device that combines router and switching functions in one box, which could appear by the end of next year. No company currently offers such a product, and user interest is high. The merger also scored a hit with users because it promises to allow them to do all of their network shopping under one roof (see chart).



Source: Computerworld Database Division, Framingham, Mass.

Out of the gate, Wellfleet/SynOptics will continue to market each other's products through their respective channels and work to integrate their products under SynOptics' Optivity network management application, which runs under Hewlett-Packard Co.'s HP OpenView and Sun Microsystems, Inc.'s SunNet Manager. The merger is expected to be finalized in October.

Most observers agreed that the two companies complement each other's strengths and said the merger could fill critical gaps in their respective product lines. For example, Wellfleet gets badly needed ATM and LAN switching technology, while SynOptics' hub line gets a critical boost at the high end via tighter integration with Wellfleet's routing technology.

"These two companies fit together better than any other combo in the industry," said Fred McClimans, an analyst at Decisis, Inc. in Herndon, Va. However, McClimans and other observers questioned the timing of the move, and some voiced doubts about whether the merger will actually go through.

Wall Street reacted harshly to the news, however, dropping Wellfleet's and SynOptic's stock 5 7/16 and 1 1/4 points, respectively. Some financial analysts said they did not believe the deal would take place, citing three shareholder suits filed against SynOptics that claim the merger is unfair. Shareholders are unhappy with the terms of the deal — billed as "a merger of equals" — under which they will receive 0.725 shares of Wellfleet stock for each share of SynOptics stock they own. Wellfleet and SynOptics are valued at roughly $300 million and $800 million, respectively.

"The bottom line is that [Wellfleet and SynOptics] are starting to feel the heat and pressure and will ultimately be forced to reconsider this merger," said Andy Schopick, an analyst at Nutmeg Securities in New York.

Others said they were more optimistic, given the fact that the market is in a negative stage concerning technology stocks [CW, May 23].

"Users want routing and switching functions to be combined, and now SynOptics and Wellfleet are best positioned to provide this," said Joe McGlone, president of McGlone & Co., an investment research firm in Westport, Conn.

John Kruk, Sun Life's *telecommunications officer, says he is 'not sure if [the merger] is a good thing'*

Either way, users said they have to be prepared to switch vendors and overhaul their networks. "We've all had blinders on for years and have tended to just buy Cisco or Wellfleet out of habit. This breaks the field open again, meaning the Cisco FDDI installation that has served us well may need to be replaced," said Chuck Rusb, network design manager at McDonald's Corp.

SynOptics and Wellfleet acknowledged they will experience some upheaval as they consummate the deal.

"The merger will cause some growing pains, and the combined company will grow at a slower incremental rate than in the past. But at the end, there will be a much leaner and meaner company," said Andrew Ludwick, president and chief executive officer at SynOptics in Santa Clara, Calif.

Ludwick will be president and CEO of the combined company. Paul Severino, president and CEO at Wellfleet in Billerica, Mass., will serve as chairman.

ATM prices fall, but standards stagnate. See page 57.

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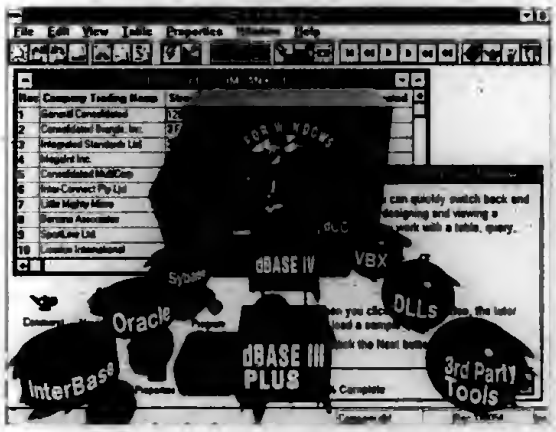

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Power Mac gets boost in Windows emulation

By Mark Halper
CUPERTINO, CALIF

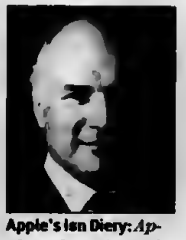
Heeding a clear user call for faster Windows emulation on the Power Macintosh, Apple Computer, Inc. will by year's end deliver an enhanced software-based emulator, said Ian Diery, executive vice president of Apple's PC division.

With questions arising over whether the next emulator will actually provide faster performance, Apple used the recent PC Expo trade show to demonstrate a 50-MHz, 486DX-based add-in board that portends speedier Windows operation on the PowerPC-based Power Macintosh. But the company declined to say when it might make such a board available.

In a recent interview at Apple corporate headquarters here, Diery said the company had underestimated the interest Power Macintosh users would have in Windows emulation.

Although the upcoming software emulator will support applications written for 486 processors, it will not necessarily provide faster application performance than the present 286 application emulator, cautioned Zdravko Podolski, director of business development at Insignia Solutions, Inc. in Mountain View, Calif. Insignia is developing the emulator for Apple and provides Apple's present emulator, Soft Windows.

Although native 486 applications run faster than native 286 applications, that speed does not necessarily translate under emulation, Podolski explained. Insignia's primary goal is to achieve 486 compatibility, rather than 486 speed.



Apple's Ian Diery: *Apple underestimated the interest in Windows emulation*

Although many Windows applications available today are written to 286 processors, application developers are writing for 486 machines more and more, so Power Macintosh users are looking for 486 compatibility, Diery said.

If Apple is unable to come up with a faster emulator, it risks losing the support of enthusiastic Power Macintosh users who have been forgiving of what they call disappointing emulation performance.

"We have huge financial models that grind to a halt under [the existing 286] emulation," said Michael Keithley, information systems director at Beverly Hills, Calif.-based talent firm Creative Artists Agency. That issue aside, he had high praise for the Power Macintosh, noting that emulation has been good for non-numeric Windows programs.

Return of the native

Most Macintosh users are also eagerly awaiting popular office automation software such as Microsoft Corp.'s Word word processing and Excel spreadsheet. Although about 100 native Power Macintosh applications are available, many of them are geared toward specialty use in graphics, design and publishing.

Michael Willcocks, Apple's vice president of global accounts, said he expects Microsoft to start offering native versions of Word and Excel for the Power Macintosh in August. A Microsoft product manager said the company plans to ship Word and Excel for the Power Macintosh about 30 days after it ships the latest version of those products for 680x0-based Macintoshes in August or September (see story page 41).

The combination of an enhanced emulator and mainstream native software could assuage 680x0-based Macintosh users such as Phillip Corchary, a network systems analyst at Denver-based US West Marketing Resource Group, Inc.

US West has installed a handful of Power Macintoshes in its 2,000-plus Macintosh shop. But Corchary said, "We're not recommending them full bore because as a company, we've made a decision that for general productivity applications, we use Microsoft Office."

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Bill Jones, MIS, age 38

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Retraining costs plague parallel processing

By Thomas Hoffman
New York

The technical and financial benefits of massively parallel processing (MPP) systems are well established at organizations such as The Chase Manhattan Bank NA and U.S. Bancorp. Yet many current and prospective users continue to complain about a number of shortcomings in MPP technology.

One key concern is the difficulty vendors have in understanding the complexities user organizations face as they attempt to retrain their information systems and departmental staffs to better leverage the advanced technology.

That and other stumbling blocks emerged as the top issues discussed at a recent Gartner Group, Inc. technology briefing here on commercial parallel processing.

"The biggest challenge is managing [parallel processing] internally," said Jonathan Vaughan, a vice president responsible for Chase's application development activities. "We have to make parallel processing seamless to the business unit users because if we make customer data easily accessible to them, then other business units will be more willing to experiment with the technology."

Last month, Chase installed an AT&T Global Information Solutions 3600 MPP system for its Chase Bank Card Services Division. The system, which will run Sybase, Inc.'s Navigation Server relational database management software once it goes into production later this year, is expected to help the division reduce its decision-support systems hardware and software costs by up to $14 million annually, said Jane Landon, a vice president at the division.

Chase's Jonathan Vaughan: *MPP wields 'competitive advantage'*

Decision-support processing at the division, which had cost the bank $18 million annually using a partitioned Amdahl Corp. mainframe, is expected to be reduced to $4 million per year under the AT&T/Sybase architecture, according to Landon.

Chase's parallel processing initiatives are designed to help the bank compete more effectively in the volatile credit-card services industry.

"There is significant competitive advantage that can be gained if you can leverage customer data more effectively" with MPP systems, Vaughan said.

U.S. Bancorp, which began implementing Tandem Computers, Inc.'s Himalaya MPP environment earlier this year to run its customer information systems, was disappointed in its evaluation of other hardware vendors.

"Other [MPP] hardware systems can forecast the weather, but I'm not sure they can solve my business problems," said Ken Arnold, an architect planner at the Portland, Ore.-based bank holding company, which has roughly $21 billion in assets.

Dashed hopes

Despite the technical and financial gains claimed by early MPP users, skeptics continue to cast stones at the industry's leading vendors for the lag in providing commercial applications.

"Vendors have been hyping these 'alternative mainframes,' raising users' expectations to unrealistic levels," said Brian Richardson, a research analyst at Meta Group, Inc. in Westport, Conn.

MPP vendors have also failed to address many of the more practical personnel issues. User firms that have adopted the technologies are having trouble retraining their IS staffs to use the systems easily and effectively, according to Karen Barrett, a senior technical consultant at CGI Systems, Inc. in New York.

Howard A. Richmond II, service director of high-performance computing at Gartner Group, said he believes the maturation of the hardware — combined with the MPP efforts of database leaders such as Sybase, Oracle Corp. and Informix Software, Inc. — will help drive the industry forward.

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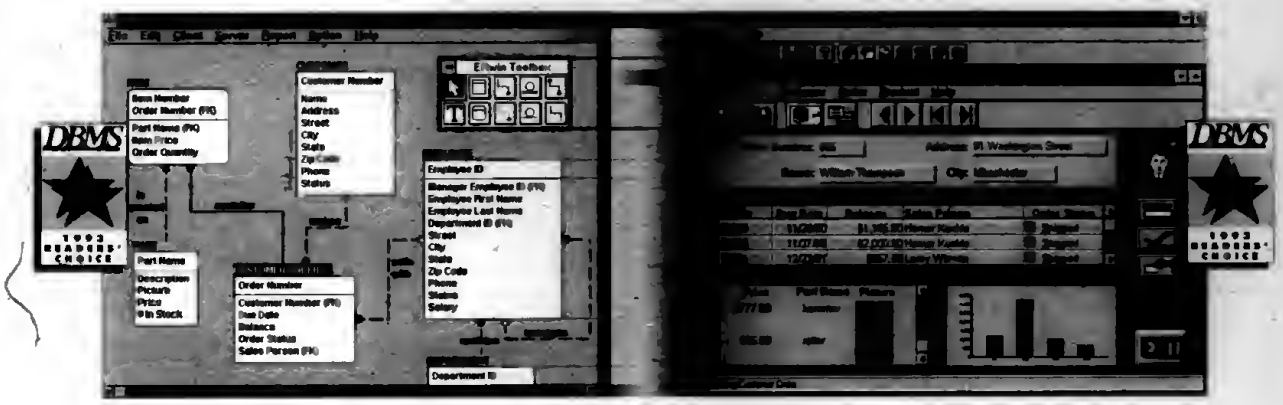

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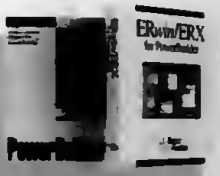

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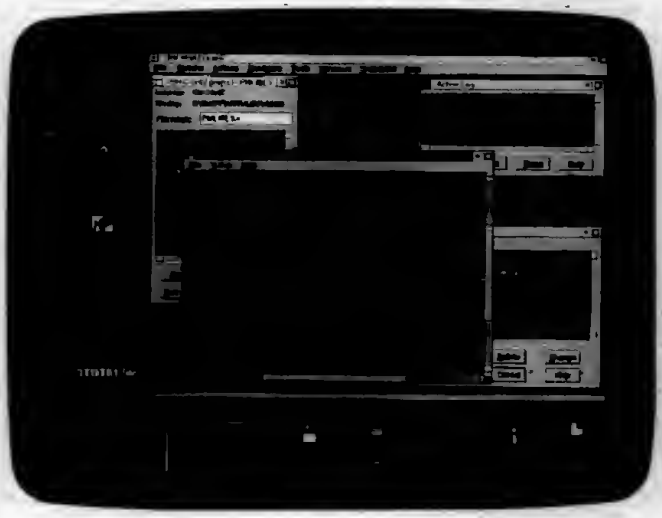

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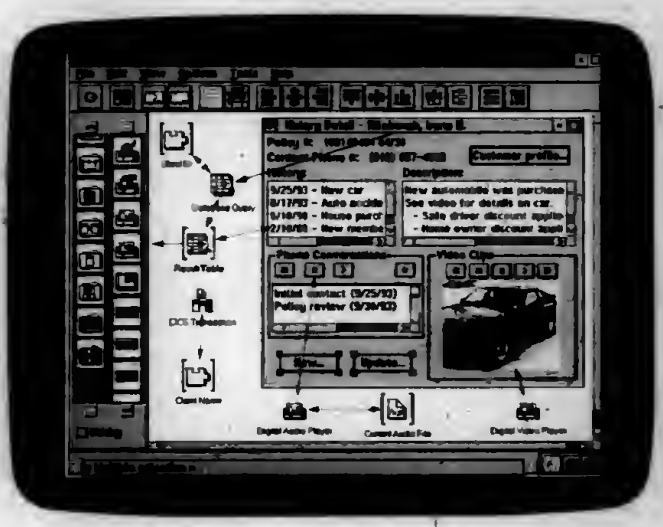

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No silver bullet for IS projects

By Ellis Booker
CHICAGO

■ Old-fashioned qualities such as leadership, team-building and effective communication are more crucial to the success of information systems projects than a workstation brimming with project management software, according to speakers at a recent conference on IS project leadership here.

"There is no silver bullet," cautioned Wayne L. Anderson, director of MIS at United Air Lines in San Francisco and a speaker at the conference.

Anderson said part of the problem is that IS projects are a relatively new discipline, around for only the past 30 years.

"People have been doing accounting projects for 2,000 years," he said. Add to this the reality of rapid technology change and unmet user expectations, and it is understandable why so many IS projects run into trouble, he said.

The inaugural Project Leadership Conference attracted an unexpectedly large turnout of more than 700 IS professionals — the majority of whom supervise teams of 10 to 25 people. The three-day event was sponsored by Applied Business Technology Corp., a provider of desktop project management tools in New York.

In his presentation, Gordon A. Mousinho, a partner at KPMG Peat Marwick in Chicago, offered the following chilling statistics based on a survey of 250 companies:

- Some 30% have experienced a "runaway" IS project — defined as one that exceeds the original budget and time frame by at least two times or does not conform to specifications.
- Some 62% had had one or more runaways within the past five years.

Several attendees at the conference added another concern beyond project management problems with budgets and schedules: How to manage the expectations of end users, many of whom have become exceedingly sophisticated about technology in recent years.

"The majority of our users have home [PC] systems," said one IS manager at a large Texas-based insurance company. "It's a double-edged sword. They are learning more, but they're also demanding more."

But there is also opportunity in this environment, said James G. Clawson, associate professor of business administration at the University of Virginia in Charlottesville, Va.

IS professionals are "well positioned," Clawson said, to shape and influence a changing organizational map — a map made possible by the introduction of new technologies. He challenged IS professionals to become attuned to the business drivers confronting their companies and recommend new models for work and organization.

Agreeing with Anderson that no "silver bullet" exists, Lois Zells, president of management consultancy Lois Zells & Associates in Phoenix, nevertheless stressed the importance of a methodology on how to conduct an IS project.

"Stable, predictable, repeatable sets of processes demand a methodology," Zells said, noting that the majority of companies that embark on IS projects work without an explicit methodology or software engineering technique.

Growing market

Indeed, the growth in the project management software marketplace is expected to be significant, from just $479 million in 1990 to $1.04 billion by 1997, according to Lynda Bodman, president of Schubert & Associates, Inc., a Boston-based management consulting firm.

One executive at the conference said he felt he had a handle on leadership issues and was now looking for more flexible project management software tools.

"We've downsized from an IBM mainframe with 250 users to a Novell network with over 800 workstations," said Garreth B. Stenner, manager of development systems at the Christian Broadcasting Network, Inc. in Virginia Beach, Va.

Stenner said the messy downsizing had "revived interest" in process modeling. He now wants an integrated project management tool that works well with his electronic-mail and computer-aided software engineering systems.

Take 2 and call me in the morning

Experts at the Project Leadership Conference had two suggestions for IS managers trying to bring a project in on time, within budget and to user specifications.

No. 1: Communicate, communicate, communicate. While updating the IS staff, users and senior management about the progress and future benefits of projects, be careful to tailor the message to the audience. The chief financial officer does not need to know you have to hire an MVS programmer.

No. 2: Find out who needs to know what, before the project begins. Also find out what three in five things each of these key individuals wants. Then make sure they get them.

Millennium madness

CONTINUED FROM PAGE 1

Bills, invoices, mortgages, insurance policies, pensions, stock trades and other time-lapse transactions will all be affected. The estimated price tag for fixing corporate legacy systems is $50 billion to $75 billion nationwide — and there are only 1,400 work days left for reprogramming, said Bill Goodwin, president of the New York-based consultancy 2000AD, Inc., which specializes in helping firms deal with the crisis.

With so many users importing mainframe data into PC spreadsheets and the like, it is not clear how IS will clean up the mess companywide, said David Zang, a consultant at 2000AD.

"The blowups probably won't happen in the data center. They'll happen on the desktops and networks," Axelrod added. His firm, which deals with 30-year bonds, tackled the problem nine years ago by ensuring its date subroutines would work in 2000.

But Axelrod said he has some new worries.

Companies must consider whether the systems they inherit from mergers and acquisitions can handle the year 2000, as well as whether third-party data feeds and electronic commerce transactions with other companies will be affected, he explained.

He warned that, absent a company standard, even new systems could be built with date fields that are too small. "Programmers don't look that far ahead. They figure the system will probably be replaced by the year 2000, but the reality is that they often live longer than we think," Axelrod noted.

Staying power

Companies may hope the millennium problem will evaporate as they phase out mainframes, but legacy systems often have surprisingly long lives. In fact, the reason this problem exists is that system designers in the 1960s and 1970s figured their systems would have a life cycle of about 10 years and would never see the year 2000.

No tricks in the bag

While there is no magic technical fix for the problem, there are a few software tools available to help IS departments identify the date-critical lines of code and estimate the cost of conversion. Among the tool vendors are Viasoft, Inc. in Phoenix, ADPAC Corp. in San Francisco, Isogon Corp. in New York and Quintic Systems, Inc. in Des Plaines, Ill.

However, many IS managers shy away from the daunting and unglamorous project. Speakers at the New York seminar said such a project can cost from $5 million to $40 million for a large corporation and will take several years of labor-intensive work by software maintenance programmers.

Given recent reports of a shortage of Cobol programmers [CW, June 6], Axelrod wondered who will do the job. IS departments may have to turn in programmers from Russia and India, he said.

Indeed, an offshore programming firm called Wipro Systems Ltd. in India — represented in the U.S. by Nazub Software, Inc. in Philadelphia — is already geared up to handle the chore.

Baby Bells file motion to end Judge Greene's reign

By Mitch Betts
WASHINGTON

Four of the regional Bell holding companies last week told U.S. District Judge Harold H. Greene that his regulatory oversight is no longer needed.

Bell Atlantic Corp., BellSouth Corp., Nynex Corp. and Southwestern Bell Corp. jointly filed a motion in Greene's court here to terminate the business restrictions in the AT&T divestiture accord, which Greene administers. The antitrust settlement prohibits the Bell companies from offering long-distance and manufacturing equipment.

The Bell companies said the 1982 Consent Decree has outlived its usefulness and that they should be allowed to compete against the oligopoly of AT&T Corp., MCI Communications Corp. and Sprint Corp. to bring down long-distance rates.

Greene imposed the restrictions because the Bell companies had a monopoly on local telephone connections. However, the Bell companies said they now face competition from firms such as MFS Communications Co. Competitive access providers serve high-volume business customers with 133 fiber-optic networks in 72 U.S. cities.

But critics such as AT&T, MCI and various consumer groups said that Greene's review of the matter will show that nothing has changed for the vast majority of business and residential customers.

"Consumers know ... that when ordering a pizza by telephone from home, they have but one choice to make that call, and that choice is over the local telephone company's network," an AT&T spokesman said.

The Bell companies further argued in their filing that "vertical integration of local service, long-distance and manufacturing operations will be essential in compete in the future."

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Cheyenne growth spurt sputters

By Mary Brandel and Thomas Hoffman

The honeymoon may be coming to an end for high-flying, fast-growing Cheyenne Software, Inc.

The $90 million LAN backup pioneer, based in Roslyn Heights, N.Y. — a household name to most Novell, Inc. NetWare administrators — has been plagued since January by a series of problems, including the following:

- Widespread complaints at the beginning of the year concerning a buggy release of Arcserve that caused server hang-ups. Cheyenne claimed the problem was caused by changes to NetWare and issued a patch that has been somewhat successful in easing the problems. "Now, every 20 days it does what it did every three to four days," said John Tsoukalas, information systems manager at Source Electronics in Hollis, N.H.
- User consternation about insufficient call-in support following the buggy release.
- Reports of overstocked distributor channels this spring, which Cheyenne downplayed.
- Shareholder suits alleging the company failed to make required security disclosures. Cheyenne said the suits were without merit.
- Disappointing fourth-quarter revenue, roughly $6 million below Wall Street's expectations.

Cheyenne's Reijane Huai: *Growth slowing but still robust*

As if that were not enough, two weeks ago the Securities and Exchange Commission launched a nonpublic informal inquiry, which Cheyenne said is related to volatile stock activity.

The stock's high of $30 per share at the beginning of this year dropped to $15 or $16 after the high inventory reports circulated, according to Terry Quinn, a managing director at Furman Selz, Inc. in New York. When the fourth-quarter warning was issued, the stock was cut in half, dropping from $16 to $6 in one day, he noted. At press time, the stock was selling at 8⅝ on the American Stock Exchange.

"Analysts expected us to do between $30 million and $32 million in revenue this quarter," said Reijane Huai, chief executive officer at Cheyenne. But the company now expects to report revenue of $24 million to $26 million, he said.

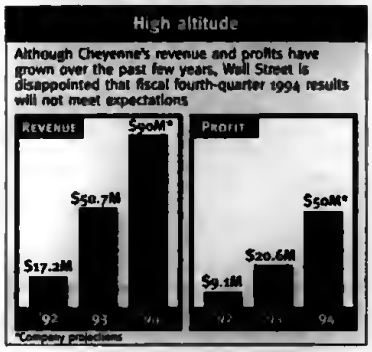
All relative

Huai also pointed out that the slowed growth is relative and that Cheyenne expects to show 85% revenue growth in 1994. Then again, the networking vendor saw 184% revenue growth from 1992 to 1993 and 147% growth from 1991 to 1992.

With 300,000 users of Arcserve, its highest-revenue product, Cheyenne is still far and away the market leader in LAN backup.

"Cheyenne is technically strong and capable," said Bob Abraham, an analyst at Freeman Associates in Santa Barbara, Calif. "But how the current situation is going to affect their ability to deliver products in a timely manner, that is key."

Some analysts defended the shortfall in revenue as the result of a few large distributors scaling back their orders. "They could have made the quarter, but they would have had to give substantially higher discounts to do it," said Doug Carey, an analyst at RAS Securities in New York. "Essentially, they put their foot down with distributors."



But the problems plaguing Cheyenne may not disappear in the near future. "Anytime business starts to slow, it's rarely a one-quarter phenomenon," noted Chuck Phillips, an analyst at Kidder Peabody & Co. in New York.

Indeed, the combination of this fiscal year's events and the entrance of new competitors in the LAN backup arena has some analysts adopting a wait-and-see attitude toward the company's future growth.

"Arcserve is an early product, but it's not a unique product," Phillips said. "Everyone and his brother has a backup package now."

Among its traditional competitors are Palindrome Corp., Legato Systems, Inc. and Arcada Software, Inc. In addition, Symantec Corp. has announced a backup product, as has Intel Corp. Even newer to the market are "enterprise data managers" from vendors such as Emprise Technologies, Inc., Legent Corp. and IBM, which claim to merge LAN backup with mainframe disciplines.

Cheyenne has responded to the heated competition by expanding into security, communications (including fax, data and voice) and network management. It also formed a wholly owned subsidiary, Cheyenne Communications, to work in the communications area.

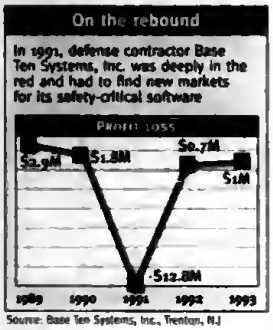
Users said Cheyenne's product is superior to the competition. Despite Arcserve 5.0's problems, "I stayed with them only because I tried two other pieces of software I didn't really like," Tsoukalas said. "It's still on the whole a 99% good product so I'd be sad to see it disappear."

Base Ten writes Rx for own survival

By Mitch Betts

Little-known Base Ten Systems, Inc., which produces the fail-safe software that keeps military aircraft from accidentally dropping bombs, is starting to apply its skill at writing safety-critical software to the medical software market.

Base Ten announced in May that it had gained a U.S. patent for Med-DOS, a fail-safe operating shell for truly mission-critical systems. It monitors the regular computer operating system, I/O functions and applications software to "verify that what the program is supposed to do in the next second is what it really does," said Alan J. Eisenberg, the Trenton, N.J., firm's vice president of technology.



Source: Base Ten Systems, Inc., Trenton, N.J

For example, Med-DOS can ensure that an electroshock system meant to supply 10,000 volts does not deliver 1 million volts. If a user or buggy software attempted to exceed the approved limits, the system would shut down, Eisenberg said.

The name Med-DOS may be misleading, however. The basic technology can work with a variety of operating systems and can be applied to nonmedical fields such as nuclear power plants, noted Alexander M. Adelson, chief technical consultant at the company. The shell requires hooks into the application software so safety-critical actions pass through the Med-DOS error-checking algorithms.

Branching out

Med-DOS is not yet a commercial product, but Base Ten plans to license its technology to a larger company with more marketing clout. However, the patent is a big step in Base Ten's strategy to branch into nondefense markets.

The firm expects that application developers will adopt Med-DOS to comply with Food and Drug Administration safety regulations for medical software — guidelines derived from military software specifications that Base Ten has met for 18 years.

Personnel troubles multiply for Spectrum

The trouble that comes with the Ides of March has stretched into July for Spectrum Information Technologies, Inc., the beleaguered Manhasset, N.Y., wireless company.

The 10-year-old firm announced last week that Peter Caserta, its controversial founder and chairman, has agreed to step down. It also signed on four new outside directors, and Spectrum officials said they are striving to repair the company's poor image on Wall Street.

In March, Caserta took a leave of absence, and six directors resigned. The company has taken a roller-coaster ride through the months since February, when former Apple Computer, Inc. Chief Executive Officer John Sculley departed under stormy circumstances after less than six months.

In addition, CEO Ed Maskaly said he would leave as soon as he could be replaced. Maskaly remains as interim CEO, but a Spectrum statement said the company was optimistic it would find a replacement within 90 days.

Analysts said the appointment of new directors was unlikely to salvage Spectrum's sullied name. "Spectrum is one of those companies that got far more press than it was ever worth," said Iain Gillott, an analyst at Link Resources Corp.

— Michael Fitzgerald

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on Page 112.

COMPUTERWORLD
Marketplace
The Product Classified Section for IS Buyers

"The phrase 'getting close to the customer' now has a definite high-tech ring," says an article in the *Harvard Business Review*.

"Farsighted companies..." it continues, "have gained a decisive competitive edge by building powerful customer information systems."

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Jim Bessen, "Riding the Marketing Information Wave" *Harvard Business Review* September-October 1993

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Halftime report

A few random thoughts on the first half of 1994:

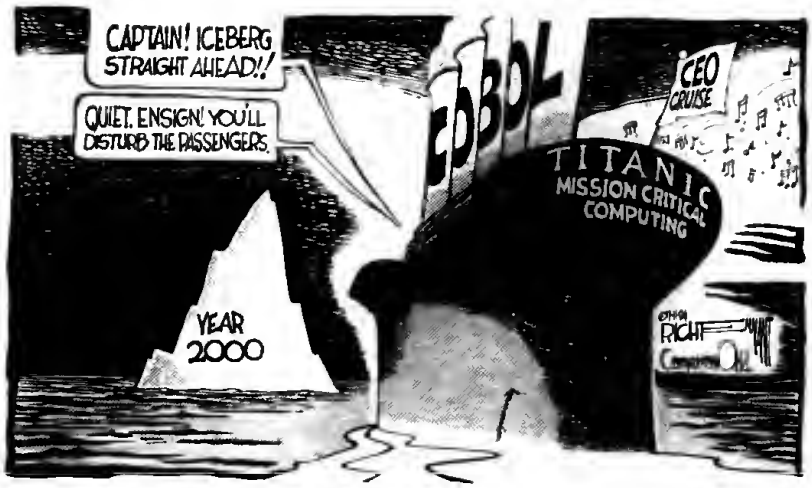
- If the information superhighway is such a tremeedous business opportunity, why is everyone trying to sell out right now?
- Borland people sure are excited about the impeoding release of dBase for Windows. But I get the seese they're about the *only* people who are excited
- Did anyone ever really expect that Chicago would ship on time?
- Read the chapter titled "Rushing the 360s" in Richard DeLamarter's 1986 book *Big Blue* and see if you wouldn't swear the Chicago preaneouncement strategy was lifted from IBM's 1964 playbook.
- Speaking of vaporware, you have to admire Intel and Hewlett-Packard for sheer obutzpah. Delivery date for their joint chip: "After 1998."
- Robert Palmer is a good man, but what Digital really needs is a cost manager like Unisys' James Unruh.
- Hey, we'd *love* to cover the O. J. story, but we just can't find the IS angle.
- I have to hand it to Novell for its really ineovative suite strategy with WordPerfect Office. But I still believe history will show Novell way overpaid for that acquisitioa.
- Now that they've announced a deal, Wellfleet and SynOptics are going to find out just how tough it is to pull off East Coast/West Coast megamergers and why most never get past the talking stage.
- It's hard to argue with Computer Associates' Charles Wang whee he points out that disaffected employees who qnit after CA buys out their troubled company probably wouldn't have beee working there a year later anyway. It would have been out of business.
- Whea all is said and done, I think we'll find that the companies that most effectively exploited business process re-engineering for competitive advantage were the managemeet consulting firms.
- Could the reason that so many CIOs lose their jobs be that the job simply can't be done?
- The Clipper chip would probably be a lot more popular if it weren't created by the same organizatioe that brought you the IRS.
- I think if the Baby Bells want to compete with the long-distance companies, they should be willing to forego the $20 billion the long-distance companies pay them now to get into the local loop. They disagree.
- With Lou Gerstner pulling the IBM wagons back into a circle and Sun consolidating some of its own business units, you have to wonder if the decentralization wave has crested.

The opinions expressed here are strictly my own, which is a great relief to my employer.

*****

On a serious note, the June 20 Wysiwyg made a reference to former Software Publishing Corp. CEO Fred Gibbons that was in poor taste. Our apologies go oet to Mr. Gibbons, who has coped with a debilitating injury with courage and dignity.

Paul Gillin, *Editor*
Internet: *pgillin@cw.com*



Re-engineering needs reality check

I laughed out loud wheo I read "Re-engineering slammed," on bow reeegioeering has failed [CW, June 13].

Re-engineering involves drastic measures for drastic times. The critical success factors for re-engieeering are the same as they are for any large change: adequate training, support of a learning curve, chaege managemeet and project management. The strikieg thing is the total lack of basic project managemeot and change management skills ie the people who are in charge of these projects.

I take issue with the question, "With a 50% failure rate, why re-engineer?" This is like saying, "If it's hard, don't do it." Risk is proportional to beeefit. Re-eegineering hasn't failed; we have.

Lou Russell
Indianapolis

I'm eot surprised to see your front-page story on the failure of re-engineering. To many IS departmeets, re-engineering means changing hardware. In fact, reeegineering means changing people — something more than a few IS folks have a hard time uederstanding.

Yes, change is difficult. It does eot have to be. Change can be fun and exhilarating. Those who change successfully understand that the energy released hy fun and exhilaratioe is the fuel that powers the change process.

Corporations are facing challeeges financially. The answer lies not so much in outting costs as it does in applying the right assets (people power) to the right tasks. Wheo the real problems are identified and faced squarely, the reeegineering process has a prayer. If they are not, then save your time, your money and your eeergy — it won't work! Go see a good movie instead. At least there, the fantasy is worth the price you'll pay.

Barbara Taylor
Silverado, Calif.

IS, teams *can* mix

I was more than taken aback by Robert A. Zawacki's glib and grim prophecies of doom for self-directed work teams in IS ["Do IS and teams mix?" CW, June 13]. Our experience offers counterexamples to almost every poiet articulated.

Our teams were formally empowered, with clear boundaries on what is off-limits. Systems development teams, for example, use company policy to pick the eext project to he worked from the backlog, then decide oe their own which team members will do the actual work.

One technical support team helped fill a vacancy by interviewing all the applicants and recommending to management the most suitable candidate, and they did so from the added vantage point that allowed observatioe of synergy and personality compatibility with the existing team. Their choice was hired, and aeclimation took hours, eot weeks or months.

Finally, the teams have asked for the ability to anonymously provide input to each other's performance appraisals. Again, this is a welcome development that we are pursuing aggressively.

Maybe rather than virtually dismiss IS self-directed teams out of hand, Zawacki should whack at the frequeetly unsupportive managemeet that puts them in place.

Gerald M. Bull
York, Pa.

Show me yours . . .

Paul Strassmann's claims for the economy of centralized computing ["Centralization's payback," CW, June 6] are conveniently based on an information productivity index that he fails to explain. Using a similar method, I measured the effectiveness of decentralized computing facilities. Based on my Information System Quality Index (which is a secret, but trust me), I find decentralized computing to be more effective when quality and user satisfaction are considered. If Strassmann will show me his index, I'll show him mine.

Charles Dietz
East Hanover, N.J.

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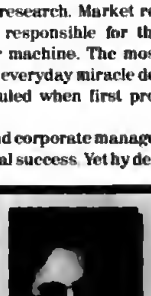
Basic research pays off in long run

Neal Goldsmith

The creative idea is much more powerful than market research. Market research was not responsible for the automated teller machine. The most innovative of our everyday miracle devices were ridiculed when first proposed.

Everyone, scientists and corporate management alike, wants financial success. Yet by definition, newly developed systems, be they departmental applications or new product lines, will be less familiar and thus a greater risk than current ways.



ATMs, the most innovative of our modern-day miracles, were at first ridiculed.

No one, certainly not Washington, knows which R&D effort will pay off and which will become next year's Rube Goldberg special. This bodes poorly for government-funded high-tech R&D, but it implies that business, if left to its own devices, would be more likely to produce the household innovations that the marketplace demands.

President Clinton has proposed a tenfold budget increase for the Commerce Department's advanced technology program. The administration is eager to channel Cold War expenditures — particularly those of the departments of Defense and Energy and the industries (i.e., jobs) they support — into new, nonmilitary, private industry ventures. The Department of Energy alone spends more than $5 billion on 21 enormous labs that directly employ more than 70,000 people.

Efforts are under way to foster greater cooperation between industry and the various government labs. Instead, the administration should focus on basic research or, in the case of military labs, spin them off to industry consortia.

It should be noted that the private sector already has near-complete and essentially free access to the research conducted at universities. MIT guarantees a new product within two years to corporate partners in the Sloan School of Management's mechanical and electrical engineering department.

As Washington implements the first proactive U.S. industrial policy in 12 years, care needs to be taken not to emulate Japan's Ministry of International Trade and Industry too slavishly.

Investments must indeed be large to produce the order-of-magnitude improvements needed to stay productive in the global business environment. Many call for government to pay for this sort of commercial product development. This is often said as a response to perceived Japanese government funding of industry research. Yet Japan's economy overheated in the 1980s. Now, Japanese factories are closing, and bankruptcies are rising.

It would be better to spend U.S. tax dollars on R&D infrastructure and other enabling investments that encourage intercompany cooperation. Our government can enable R&D by cofunding research on process and manufacturing technology, by training and educating our work force (before as well as after industry slumps) and by presenting a tax environment more hospitable to corporate R&D.

Life is full of paradoxes. Love hurts. Sweets are fattening. Basic research is very expensive in the short term, but it pays off over the long haul. Full government funding of commercial research is an appealing solution in the short term but over time becomes a trap, focusing companies on ever-increasing refinement of yesterday's innovation.

Such government research can raise workplace productivity but not nearly as well as private-sector efforts.

Goldsmith is editor and publisher at consulting firm Tribeca Research, Inc. in New York.

Forging ahead with futzware

Michael Schrage

I would have finished this column much earlier, but I was too busy futzing around with it on Microsoft Word.... I'm sure you understand.

PCs are the world's greatest medium for futzing around. They're computational catnip for obsessives, keyboard crack for neurotics and seductive time sinks for ordinary folk who just want to make sure that they've reasonably examined all their options. Why do you think we call them "users"?

That's why network champions such as Sun God Scott McNealy joke that Fortune 500 companies could radically boost productivity if only they confiscated people's PCs so that they wouldn't waste so much time recalibrating their spreadsheets and reprocessing their words. Of course, it's just as easy to futz around on a network.

Let's call these antiproductivity PC apps what they are: "futzware."

Futzware is software that lets us too easily rejigger *those* numbers and see what *that* looks like if we do *this*. An app devolves into futzware when the value of the time spent on it sneaks past the point of diminishing return. Needless to say, the usual suspects of academics and consulting firms have data proving that U.S. knowledge workers waste billions of hours/dollars a year on futzware. IS departments, of course, never address the futzware factor; that's the department's problem.

Right.

Wait until all those promised multimedia apps come on-line, bursting with audio, video and custom GUI capabilities. Instead of matrices, strings of alphanumeric text and graphics, there'll be animation synchronized with sound and interactions. May I propose Schrage's Law of Multimedia Futzware? The amount of time spent futzing around expands exponentially with the number of dimensions available to be manipulated.

The time spent futzing around expands with the number of dimensions available for manipulation.

Seriously, there should be no doubt that the biggest potential impact of the move toward client/server won't be the everybody-hold-virtual-hands-and-share-our-data enterprise computing fantasies or the benefits of distributed object-oriented software development. Rather, it will be the ability to actually track how much time people spend futzing around with all their data.

Forget network configuration logs; there is a huge market to be made in determining just how many times a document gets edited before it's "done" or how many iterations that departmental budget spreadsheet endures before it's kicked to the finance department.

In other words, the accelerating growth of futzware is generating a demand for tools that will give firms insight into just how productive their productivity tools really are. Within two years, you can expect client/server systems to start sending messages to people along the lines of "You have spent over four hours on this 350-word memo" and "This is the 343rd modification of this spreadsheet you have made."

IS departments understand that there's a lot of futzing around going on in their PC worlds. Humans being what we are, futzware will always be a part of our systems. But there's no such thing as free futzware. Expect the move to client/server to begin organizational efforts to measure, monitor and control it.

Schrage is a fellow at the MIT Sloan School Center for Coordination Science and the MIT Media Lab. His Internet address is schrage@media-lab.mit.edu.

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At Work gets off to slow but hopeful start

Microsoft device integration may hinge on release of Chicago

By Stuart J. Johnston

■ A year after witnessing the hoopla surrounding Microsoft Corp.'s introduction of a grand plan to integrate office equipment via Windows, users are still waiting to see substantial results.

However, some analysts and users said they are still optimistic despite the lateness of products that will support the At Work operating system.

At Work is a combination of technologies that includes systems technology for business machines, such as faxes and private branch exchanges, and communications technologies to be integrated into Windows.

At their June 1993 announcement, Microsoft and officials of many major business machine vendors and PC OEMs anointed At Work the office integration technology of the future.

Once the strategy is in place, users will be able to directly interact and control virtually all of today's office machines, including telephones, from a common user interface — namely, Windows.

Users would be able to check voice- and electronic-mail, perform call-routing tasks such as transferring calls to other phones and check the status of the printer or fax machine down the hall — all from their PC.

"Fax machines [supporting At Work] are expected to be available at the end of this year, with many more products and services following in 1994," reads the press release from Microsoft's announcement.

So where is it?

But more than a year later, company officials conceded that only a single printer and Microsoft's own Windows Printing System — which only partly implements At Work's capabilities — let users access business machines from Windows.

In fact, the first At Work-compatible fax machine, from Ricoh Corp. in West Caldwell, N.J., just entered beta testing, according to Bjorn Hovstadius, Microsoft's director of marketing for At Work. That puts it well past six months late.

Meanwhile, other promised products are sliding as well.

For example, Dow Jones Business Information Services in Princeton, N.J., still plans an electronic publication that will be delivered to At Work-enabled, wireless handheld devices.

However, a spokeswoman for the Dow Jones unit was noncommittal about when the service would be available, saying it is "still in development." The spokeswoman gave no reasons for why the service is in limbo.

That may simply be symptomatic of the "chicken or egg" conundrum that all vendors of such integrated technologies face.

> "Chicago is the linchpin of At Work, [and] it doesn't do the equipment vendors any good to have products out if Chicago isn't out."
>
> *—Ken Camarro*
> *Researcher*

No good without the hardware

For example, an information service for handheld device users is useless until handhelds based on At Work appear. That has yet to occur, although Hovstadius said the first one is due out by year's end. But that handheld device is likely to be a vertical market machine, rather than a mass market product, he said.

Further down the food chain are applications that specifically support At Work. So far, Delrina Corp. in San Jose, Calif., is virtually the only company offering a Windows application that supports At Work — a version of WinFax Pro.

Even Windows for Workgroups 3.11, which shipped last fall, provides support only for At Work-enabled faxes and printers, thus leaving full-scale support until Chicago, the next major update of desktop Windows, is released.

"Chicago is the linchpin of At Work, [and] it doesn't do the equipment vendors any good to have products out if Chicago isn't out," said Ken Camarro, a Fairfield, Conn.-based researcher who just released a report on At Work's progress and potential.

Unfortunately, Chicago, also called Windows 4.0, is reportedly running late too — possibly as late as March or April 1995, according to sources who have been briefed.

High hopes

Still, Camarro and some early users said they are not deterred by At Work's slow start. Change is coming, and while it may come more like a glacier than a speeding freight train, users will gradually adopt such an approach, they said.

"This is not going to really happen for a while," said Tony Valente, chief executive officer at CBC Communications Corp., a small company with headquarters near Santa Rosa, Calif.

CBC Communications, which is developing a large network for graphics users, itself uses an At Work-enabled printer from Lexington, Ky.-based Lexmark International.

"Any idiot can see the need for it, [but] you're looking at generational social change," Valente said.

Indeed, Camarro predicted that if Microsoft and the hardware and software vendors all follow through, At Work may truly find ubiquity in the second half of the decade.

"If Microsoft At Work can be proven during the mid-1995 to mid-1996 period, then Camarro Research believes there will be a steady changeover," Camarro's report said.

Microsoft's At Work

The At Work operating system architecture requires that pieces of code be embedded in myriad devices as well as in the PCs operating system in order to integrate office equipment with PCs

Promises, promises

Microsoft's At Work operating system promises many features for users as the hardware and software become available during the next few years.

Users will receive notification of paper jams or outages right at the PC, rather than discover the problem in the printer room after sending a file to print.

In fact, with Lexmark International's WinWriter 600, the first At Work-enabled printer, users can check the print queue to identify jobs already waiting and perform a number of other common tasks. That printer, which prints eight pages per minute at 600 dot/in. resolution, costs $1,399. Others, including less expensive ones, are on the way.

"I think sometime in the third and fourth quarters we'll see more At Work printers, and some of these will be lower priced," said Rick Scott, a Lexmark spokesman.

Far away

At Work will also enable users to send a document to a fax machine on the network and send to another user several hundred miles away, allowing the recipient to print the document with the original quality or edit it.

However, At Work-enabled fax machines will not arrive until later this year at the earliest.

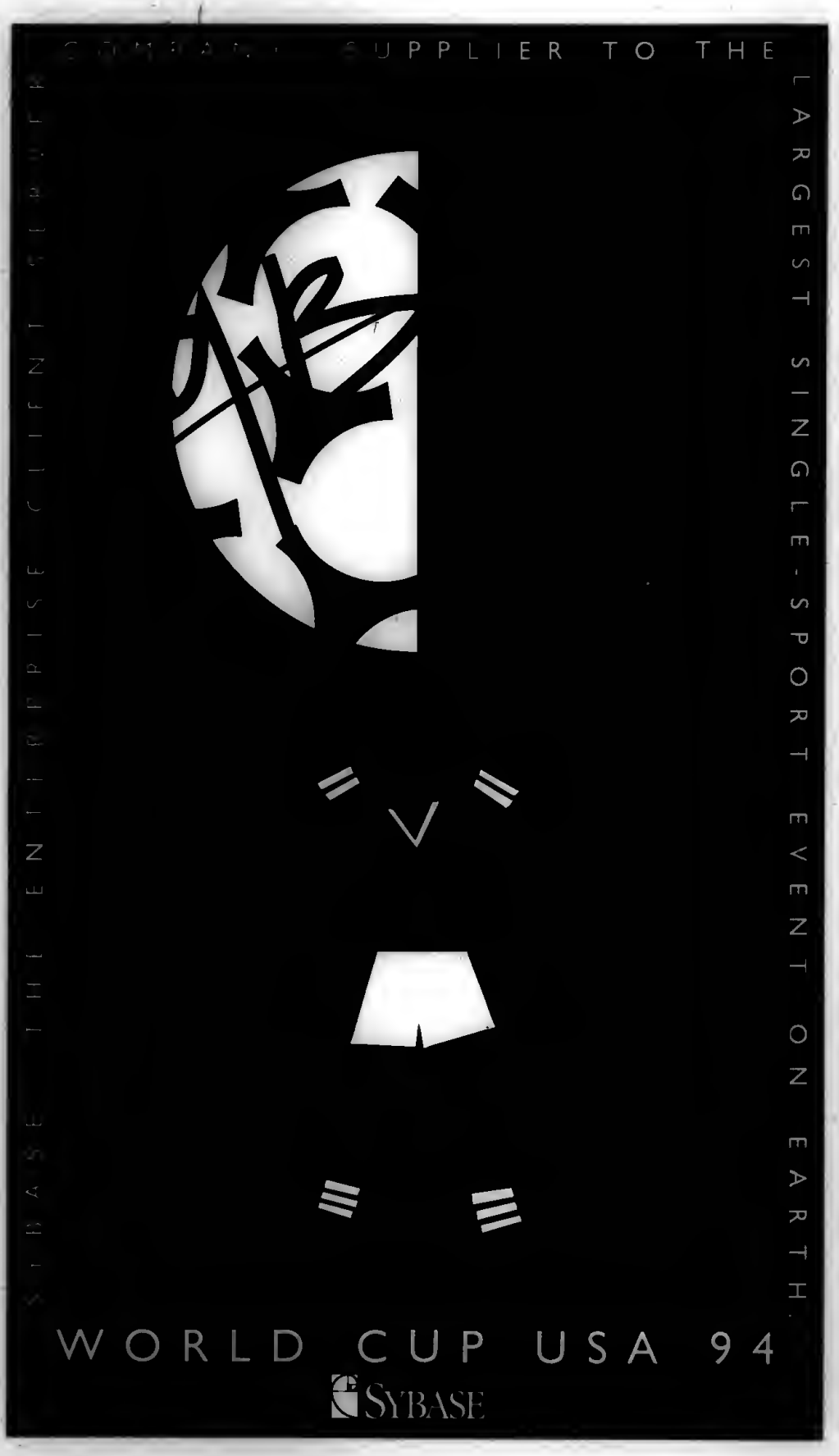
Other features of At Work include the planned capability to merge voice- and electronic-mail on the PC. This will require not only phone management software for the PC but also Windows 4.0 and add-on software for phone systems.

And, of course, it will require phones with built-in At Work support. The first of these will begin trials in the first quarter of 1995, according to Bjorn Hovstadius, Microsoft's director of marketing for At Work.

Still, despite all of the promises of the future promulgated over the past year, the way a technology is employed ultimately determines its success.

"My experience is that [users] will gravitate to the one or two features that are really compelling, and the rest will languish because there just isn't time" to take advantage of them, said Tony Valente, CEO of CBC Communications.

—Stuart J. Johnston



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Microsoft apps to follow new platforms closely

By Stuart J. Johnston
REDMOND WASH

New platforms are popping up the way mushrooms do here in the damp Pacific Northwest, and Microsoft Corp. is readying a slew of applications to run on them.

The company is developing versions of its major applications for the coming Daytona upgrade of Windows NT, the Chicago version of its Windows desktop system and Apple Computer, Inc.'s Macintosh and Power Macintosh.

Likely to hit the market first are new versions of the Word word processor, Excel spreadsheet and PowerPoint presentation graphics package, which will also be available as the Office suite for the 680x0-based Macintosh.

These are scheduled to ship "sometime this summer, in August or maybe September," said Robbie Bach, group product manager for Microsoft's Office. Power Macintosh versions will follow in about 30 days, he added.

The 680x0 Macintosh versions will enter broad beta testing this week, with the Power Macintosh versions likely to follow late this month.

Microsoft has also committed to shipping 32-bit NT versions of Word and Excel about 30 days after Daytona's release, which is promised before October. Both of these applications require Daytona in order to run and are currently in beta testing.

Some beta users are salivating for all three sets of programs.

Rollout schedule

MICROSOFT'S PLANNED RELEASE DATES FOR NEW APPLICATIONS

Platform	Applications	Planned ship date
CHICAGO (WINDOWS 4.0)	WORD, EXCEL POWERPOINT, OFFICE	30 DAYS AFTER CHICAGO, WHICH SHIPS IN DECEMBER
DAYTONA (WINDOWS NT 3.5)	WORD, EXCEL	SEPTEMBER
680X0 MACINTOSH	WORD, EXCEL POWERPOINT, OFFICE	AUGUST OR SEPTEMBER
POWER MACINTOSH	WORD, EXCEL POWERPOINT, OFFICE	ABOUT 30 DAYS AFTER THE 680X0 MACINTOSH PRODUCTS SHIP

"I'm dying to have the final release of [Word for Daytona] because I'd like to go to Daytona as my desktop when it comes out," said one beta tester, who asked to remain anonymous. However, the user is also testing the Macintosh version and has Power Macintoshes on order as well. The Macintosh version "is coming along quite well, too," the beta tester said.

Daytona, also called Windows NT 3.5, will be available in two versions (as NT 3.1 is currently), a Workstation and an Advanced Server version. Chicago, also called Windows 4.0, is targeted as the replacement for Windows 3.11 and Windows for Workgroups 3.11 and will feature a built-in "universal" electronic-mail client.

Daytona applications are the first programs that can be used to test Chicago's 32-bit preemptive multitasking, a benefit for users who are also beta-testing Chicago.

However, because the Daytona applications were written for NT's Windows 3.1-style user interface, they will not take advantage of Chicago's new look and feel.

Microsoft plans to release Chicago versions of all of its Office desktop applications "either when [Chicago] ships or shortly thereafter," Bach said. "There will be some spread because we have to have final [Chicago] code before we ship" the applications, he added.

Briefs

DOS is boss

While Microsoft Corp.'s Windows juggernaut rolls on, six of the Top 10 applications for both business and home are DOS-based, according to a survey conducted by Computer Intelligence/InfoCorp's Consumer Technology Index. The No. 1 application for business is WordPerfect Corp.'s WordPerfect for DOS, followed by Lotus Development Corp.'s 1-2-3 for DOS and Microsoft's Word for Windows and Excel. WordPerfect for DOS was also the most popular application used in the home, followed by Broderbund, Inc.'s Print Shop for DOS, 1-2-3 for DOS and Word for Windows.

PowerPC 603 ready to roll

Ten months after it started production of the PowerPC 601 chip, IBM Microelectronics has announced the availability of its next-generation PowerPC 603 chip in sample quantities. The new processors, which will start shipping in volume in the third quarter, cost $165 for the 66-MHz version and $195 for the 80-MHz version. IBM also reduced prices on the PowerPC 601 processor.

Carole Patton

Chicago lacks beef

Successful beyond anyone's imagination four years ago, Windows is now overdue for a major upgrade. But Chicago isn't it. Incredibly, this long-anticipated software has more in common with IBM's OS/2 than it does with Windows. Remember that Microsoft wrote the first version of OS/2 back in 1987 during its courtship with IBM. Then in 1990, when Windows 3.0 proved so popular, Redmond left Big Blue and OS/2 waiting at the church.

Don't get me wrong. Chicago may turn out great. But corporate Windows users won't rush to upgrade, probably delaying widespread adoption until 1996 even if Microsoft halts retail sales of Windows 3.1 once Chicago is released. No systems administrator or IS manager is going to bet his career on this guppy until virtually all the quirks have been ironed out.

Microsoft's "problem" with Windows has always been how to get rid of DOS. (Windows runs on top of it.) There is still a huge installed base of DOS users. And, more importantly, DOS is absolutely necessary to preserve compatibility with all those real-mode DOS device drivers.

The solution centers on the fact that both OS/2 and Chicago create Virtual DOS Machines (VDM) to run DOS applications. This is a protected mode process that emulates the DOS operating system so DOS applications can run just as they would under "real" DOS. It depends in great part on the newer Intel processor designs that allow an operating system to create all those tiny little "virtual" 8086 processors on a single CPU.

> If Chicago screws up while taking the stage from Windows 3.1, corporate users could soon be doing serious business with Big Blue

What's more, OS/2 and Chicago both use actual DOS code to emulate DOS. Both start up DOS in real mode, then switch over to protected mode for 16-bit Windows applications. For those persnickety DOS applications that won't run inside a VDM (generally because they require direct control of hardware), Chicago offers an "Exclude" mode and OS/2 offers "real" DOS running alongside OS/2. Another similarity is Chicago's VFAT file system for long file names, which looks just like OS/2's HPFS file system.

Not a great Explorer

And then there's Chicago's new shell, called Explorer, which puts folders and icons on the desktop (much like OS/2's Workplace Shell). Well, Windows users won't want to start shoffling icons on a desktop now because a lot of effort has been invested training people on Program Manager and File Manager.

Besides, Explorer is a first attempt, and it is downright ugly. (OS/2's Workplace Shell is elegant by comparison.)

Nothing in Explorer works the way you'd expect. The Start button doesn't "start" anything. (It brings up a list.) And objects you think need a double-click (such as the Start button) require only a single mouse click.

In fact, Chicago may provide the break IBM needs. OS/2 2.1 has been out for two years and has proved itself stable. And because it contains Windows code, it runs Win16 applications just fine. If Chicago screws up while taking the stage from Windows 3.1, corporate users could soon be doing serious business with Big Blue.

Why can't Microsoft just give us a real Windows upgrade? One that fixes things such as the disappearing resource problem. This is the maddening situation in which I am forced to load, unload and then reload some overstuffed Windows 3.1 application because it locked up memory that my second program needed to start. Microsoft executives say this issue is being addressed, but so far the Chicago beta solves the problem only for 32-bit applications, not the 16-bit ones I use every day.

And if Microsoft wants to add something new to Windows, how about a universal install utility? Installing software is something an operating system should handle. Why should I have to read all those manuals and search Readme files for compatibility information? A standard setup program would also relieve independent software vendors of the job of writing installation routines, something they might appreciate because most spread their programming resources pretty thin.

Not a great problem-solver

I'd also like better diagnostics. Whenever a problem crops up in the Windows environment, isolating it is tedious. Is it Windows? Or is it a bug in some application? Right now, if two vendors use the same name for a public Dynamic Link Library (DLL), Windows overwrites the first DLL, and the application is hosed. The least Windows could do is supply a routine that does a checksum on program files and verifies that the right components are present.

Chicago may indeed be "Super Windows." Once I've spent some time with it, I might even switch. But I'm not ready to retire Windows 3.1 just yet.

Patton is chief analyst at Mendham Technology Group in Mendham, N.J., and produces summits on new computer technologies. She is the author of *OS/2 Secrets* from IDG Books and publishes the "Windows Letter" newsletter. She can be contacted at MCI Mail 401-4869 or CompuServe 73700,2503.

Novell/WordPerfect merger hits ground running

PerfectOffice suites debut as 'first step' toward broad integration

By William Brandel and Elisabeth Horwitt

Wasting no time after officially consummating their merger, Novell, Inc. and its newly acquired application company, WordPerfect Corp., unveiled their first jointly developed product at the recent PC Expo in New York. Called PerfectOffice, the product is being billed as the industry's first application suite with built-in networking capabilities.

The new suite will be delivered in the following three packages:

- The standard configuration, which will include Object Linking and Embedding (OLE) 2.0-compliant versions of WordPerfect, the Quattro Pro spreadsheet, WordPerfect Presentations, the personal information manager InfoCentral and the workgroup publishing tool Envoy. The standard package will also include a client for WordPerfect's Symmetry electronic-mail package, formerly called WordPerfect Office.
- The PerfectOffice Professional package, which will include an OLE 2.0-compliant version of Borland International, Inc.'s Paradox database and Novell's Visual AppBuilder, which is a fifth-generation macro scripting tool.
- A CD-ROM-based version, called PerfectOffice Select, which will allow the customer to select any application from either the standard or professional version as well as a number of third-party applications.

WordPerfect also formally launched its PerfectFit Partners program, which will enable third-party vendors such as Intel Corp. or Calera Recognition Systems to integrate their applications with the PerfectOffice suite. WordPerfect said 70 developers have joined the program.

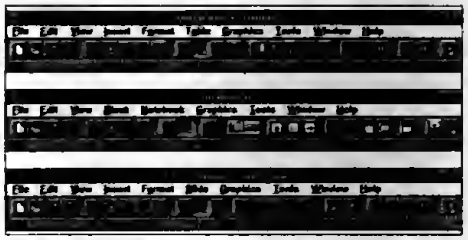
Just the beginning

On the networking front, all PerfectOffice applications support the following Novell NetWare-based services:

- A File Open dialog box, which includes a Network button enabling users to select and attach to different NetWare servers and map network drives without having to exit the application.
- Support for Novell's NetWare Navigator to enable administrators to set up automated installation and updates of suite applications on client systems across an enterprise.

A WordPerfect spokesman said these features are a first step toward a much broader integration of the companies' products, particularly on the workgroup, document management and messaging fronts. Novell and WordPerfect are working to make NetWare services such as imaging and telephony available on the desktop through WordPerfect applications, he added.

In addition, the companies are in the process of merging messaging platforms, as was discussed in premerger briefings [CW, April 4]. WordPerfect hopes to support Novell's NetWare Directory Services with its Symmetry messaging/calendaring/scheduling product by the time NetWare 4.1 ships late this year, said Stewart Nelson, vice president of research and development for Symmetry.



WordPerfect and Novell *designed PerfectOffice with tool bars and buttons common to multiple applications*

More is less

The concept of networked applications is a potential market winner, but Novell had a better chance of selling it to customers when it was concentrating on being a network services vendor, said Jim Harrison, vice president of global networking strategies at Meta Group, Inc., a Westport, Conn.-based research firm. With its fingers in a variety of non-networking pies, Novell is losing credibility with some of its customers, he added. "I don't believe people will buy either WordPerfect desktop applications or Novell network services because of the coupling of the two."

Indeed, users indicated that buying into the Novell/WordPerfect networked application suite strategy would require a leap of faith that they are not yet ready to take.

In going from a stand-alone application to a networked suite of products, "the whole user support issue gets much more complex" as well as more expensive, said H. Reid Hoadley, an IS manager at St. Josephs Hospital in Kirkwood, Mo. "I think the issue has to be addressed up front and bundled with the sale of the product."

"I would have to see [the networked suite] in use and evaluate its effectiveness" before determining whether to buy, said Richard Mellar, data processing manager for Hartford County in Maryland, another Novell and WordPerfect user.

Novell has emphasized that its networked applications strategy will be open to other independent software vendors, particularly through the AppWare development environment, but "whether [they] take advantage remains to be seen," Nelson said.

Perfect match

PerfectOffice highlights include the following:

PerfectLinks: This technology will enable a PerfectOffice customer to plug competing applications into the suite. For example, a Lotus Development Corp. 1-2-3 customer could plug that spreadsheet into PerfectOffice, and the program would be automatically integrated into the suite.

Macro and scripting tools: Like Microsoft's Visual Basic Application Edition tool in its Office 4.x suite, the Novell/WordPerfect suite includes PerfectScript for developing macros of scripts across programs. Novell's Visual AppBuilder in PerfectOffice Professional lets developers create application loadable modules without writing code.

PerfectSense: Using linguistic technology, this feature performs intelligent search and replace. When replacing a word in text, the word is replaced in the appropriate tense.

PerfectOffice Select: With the suite and complementary applications shipping on a CD-ROM, users can "shop" the CD before purchasing an application. The CD will include reviews and audio information about the programs offered. By dialing an 800 number, users can receive a "key" to unlock program encryption. Users will be charged only for the applications they choose.

— William Brandel

AST notebook throws down challenge to IBM dominance

By Michael Fitzgerald

■ A new notebook computer from AST Research, Inc. could signal that IBM PC Co.'s lock on the high end of the market is weakening.

The Ascentia line is the first from a significant notebook player other than IBM to offer a 10.4-in., thin film transistor, active-matrix screen, which has been the most noticeable differentiator for IBM's high-end ThinkPads.

"This indicates that the ThinkPad lead is shifting and could change things in the market," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass. Zwetchkenbaum added that IBM's sizzling performance in the notebook arena could be slowed unless its recent foray into the value market gives it a boost.

Even IBM users agreed that the Ascentia line could make things more interesting for IBM.

"That could put some pressure on IBM, especially if [AST] can ship them," said Enrique Crespo Jr., manager of corporate sales systems at Torrington Co. in Torrington, Conn. Torrington's field sales force is using IBM's ThinkPad 750CS, which has a passive-matrix color screen, because it could not get active-matrix color notebooks from IBM when it wanted them.

Crespo said he is skeptical that AST will be able to deliver volume quantities of the active-matrix color Ascentia, pointing out the inability of most vendors to ship active-matrix color notebooks.

Will satisfy demand

AST says that because its 10.4-in. panels come from a different supplier than IBM's, it expects to be able to meet demand. The company will also offer an Ascentia machine with a 9½-in. active-matrix screen as well as a 10.3-in., dual-scan, passive-matrix color screen. Weights range from 6.6 to 6.9 pounds.

AST has also decided to put a new interface on top of Windows. Called ASTWorks-Mobile Edition, the interface borrows from the same shell on AST's Advantage multimedia PCs. The interface organizes users' programs into one of nine modules, in a more intuitive fashion than the Windows interface, according to analysts.

"It makes the system easier to use, rather than jumping from interface to interface to interface for different programs," said Randal Giusto, an analyst at BIS Strategic Decisions in Norwell, Mass. Giusto said he expects to see AST add other features tailored to mobile users over the course of the year.

Pricing for the Ascentia 900 line ranges from $3,399 to $5,959, while ThinkPad 755C starts at $4,949 and tops out at $6,549.

AST in Irvine, Calif., is bundling a variety of software with the Ascentia notebooks.

Notable

The Ascentia 900N includes the following:

- Intel Corp. 25/50-MHz i486DX2 or 25/75-MHz DX4 chip.
- 340M- or 510M-byte hard drive.
- 4M or 8M bytes of RAM, up to 32M bytes.
- Local-bus graphics via Western Digital Corp.'s 90C24A RocketChip.
- SurePoint integrated pointing device.
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Management plans slow to bear fruit

Network/systems melding faces hurdles

By Steve Moore

Everybody's talking about it, but nobody's doing it yet.

Companies as diverse as IBM, Microsoft Corp., AT&T Corp. and Novell, Inc. have outlined high-level strategies for enabling users to manage all aspects of their computer systems and networks from a single control point.

However, those strategies have not yet resulted in tangible products and services that fully integrate systems management with network management.

Analysts say the disciplines of network management and systems management will intersect first when repetitive systems administration tasks such as software distribution are automated and accomplished via networks.

"It's a real quagmire trying to define where the boundaries are [between network management and systems management], who has responsibility, what the functions are and how they overlap," said Ken Thurber, president of Architecture Technology Corp. in Minneapolis.

Wavy lines

Thurber said network/systems management boundaries are being blurred by the automation of configuration and control tasks such as software distribution, software license management and workstation configuration. Users with experience in Unix and TCP/IP are best-positioned to deal with these issues because they typically have not become embroiled in the long-standing turf wars between corporate information systems and telecommunications departments, Thurber said.

"We're starting to see a move toward enterprise information systems management, which means network, systems and business management all wrapped into one," said Charles Robbins, a vice president at Aberdeen Group in Boston.

The products that reflect the beginnings of network/systems management are software distribution packages, backup packages, performance management packages, server and workstation configuration management products and security packages, Robbins said.

The commonality of these functionally targeted products is that they accomplish via networks systems administration tasks that previously had to be accomplished via "Sneakernet," one PC or workstation at a time. Robbins pointed to Hewlett-Packard Co.'s OperationsCenter as one example of a higher-level, multifunction product that attempts to integrate some aspects of network and systems management.

True value

Users, however, are often more enthusiastic about simpler products that are valued for the time they save, not for being among the first products to cross network/systems management boundaries. An example of such a product is Win-Install, an automated software distribution product from On Demand Software and Services, Inc. in Naples, Fla.

"I've saved hundreds of hours over any major upgrade for a LAN environment of about 400 users," said Dave Hamrick, manager of technical development at Ernst & Young in Boston and a user of Win-Install.

Software distribution products soon will integrate additional administrative functions such as tracking software licenses. "In the future, we intend to go to complete integration of the license management function with the distribution function," said John Webster, manager of software distribution strategies at IBM.

Operating systems

New Solaris release promises speed gains

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

As Sun Microsystems, Inc. prepares to ship the Solaris 2.4 Unix operating system later this summer, it is starting to unveil features that will take advantage of its ability to run on SPARC workstations and Intel Corp. x86 PCs.

Solaris 2.4 will also run applications up to 60% faster than Solaris 2.3 and will be easier for systems administrators to install, said executives at SunSoft, Inc., Sun's software arm.

Although Solaris 2.4 debuted at the Solaris Developer Conference in April, a formal announcement complete with all the new features and full pricing details has not yet been made.

"One of the reasons we view this as a reannouncement of Solaris 2.x is that, finally, all the things we have asked customers to wait for are there," said SunSoft consultant Eric Jaeger. Among these are high performance, scalability and better PC administration, he said.

Because the primary feature of Solaris 2.4 is its ability to synchronize Solaris code for Intel x86 PCs and Sun's SPARC machines, industry analysts said they expect it to have more ease-of-use features than Solaris 2.3. Based on SunSoft tests, Solaris 2.4 will run application software 10% to 60% faster than Solaris 2.3, said Gary Little, marketing director at Solaris Products Group. And a new file system structure will shorten the time needed for backup and recovery, Little said.

Providing ease-of-use features, along with greater reliability and performance in the base operating system, has taken some time.

"Solaris has been under a lot of scrutiny for reliability and features, with the expectation that it was going to take the place of the mainframe," said Janpieter Scheerder, vice president and general manager of SunSoft's Solaris Products Group. "The fact is, it took us a while to get this thing right."

Trouble behind?

Longtime Sun users certainly agreed, noting that early versions of Solaris 2.x were not nearly as stable or bug-free as Solaris 2.3. The gap between Solaris 2.3 for SPARC workstations and Solaris 2.1 code for Intel PCs also troubled users who wanted to maintain a single set of code. Initial Solaris x86 shipments were disappointing, industry analysts said.

Although SunSoft estimates that roughly half of the Sun installed base is on Solaris 2.x, a variant of Unix System V Release 4.0, many users reported trouble migrating from SunOS. A lack of backward compatibility with SunOS — also known as Solaris 1.x — was remedied just last summer with a Binary Compatibility Package that runs SunOS applications under Solaris 2.x [CW, July 5, 1993]. Sun executives, including Sun Chief Executive Officer Scott McNealy, now promise to maintain backward compatibility in all Solaris releases.

As desktop hardware becomes more varied — as it will, for example, with the arrival of IBM's PowerPC machines by 1995 [CW, July 4] — users want Solaris to run consistently on different platforms. "If I'm going to start using Solaris on Intel, I want it to be exactly the same as the rest of the Solaris boxes on the network," said Michael Prince, information systems director at Burlington Coat Factory Warehouse, Inc. in Burlington, N.J. "That just makes it easier to administer." The firm has 400 Sun workstations and an equal number of Intel-based PCs running Windows, he said.

But Solaris desktop clients will be able to access Solaris servers seamlessly, picking up Unix applications that are actually running on remote Unix machines.

Leading features of Solaris 2.4:

- **Performance boost** of 10% to 60% over Solaris 2.3.
- **Quicker installation** for systems administrators.
- **New ease-of-use features** for PC users.
- **Journal-type file system** for backup and recovery.
- **Support for Novell, Inc. NetWare** clients and servers.
- **Support for Wabi 2.0** Windows-on-Intel interface.

"You can't throw massive amounts of memory and cycles on the desktop," said Jim Stikeleather, a partner at Technical Resource Connection, an open systems consultancy in Clearwater, Fla. "As you increase the performance of the [Solaris] operating system, more processing is happening on the servers."

That point may be lost on traditional PC users who view their workstation as an independent computing resource, Stikeleather said. "What Sun is doing with Solaris is giving you the ability to make the desktop an integral part of the network." Of more than 8,000 Solaris applications, there are nearly 3,000 Solaris 2.x applications that will run on both Intel and SPARC machines under Solaris 2.4, Sun said. Pompi Malik, IS manager at Brewers Retail, Inc. in Mississauga, Ontario, also expects enhanced point-to-point protocol communications software and improved systems administration.

Despite its efforts to woo users of Intel-based desktop machines, SunSoft will confront user resistance to installing Unix for personal applications, analysts said. Many users associate Unix with a set of arcane, unfriendly commands such as "uucp" that they must master to enter the club of Unix users. Sun is now recognizing that fact, Scheerder said.

"You don't have to be a command-line artist to add a user or to reconfigure your system," he said. "One of the things [we are saying] is that Solaris is not the old Unix."

Mobile releases bring remote users closer to home

Datasonix puts backup capability on the road

By Michael Fitzgerald

Even tape backup is going mobile these days, as vendors continue looking for niches to fill in the notebook market.

Recently, Datasonix Corp., a Boulder, Colo. start-up, released Pereos, an external tape backup drive that fits in the palm of your hand. The 10-oz. product runs digital audio tape-quality media in cartridges that hold 615M bytes of uncompressed data or 1.25G bytes of compressed data. Datasonix officials said Pereos can back up more than 100G bytes of data.

Datasonix's Pereos *backup drive fits in the palm of your hand*

Pereos will sell for $595 when it ships in the third quarter and will initially come in an external version, with a PCMCIA version to follow. It appears to have particular potential in two markets: backing up remote users' data, such as contact lists, and transporting large files, such as application software upgrades.

Backing up on the road is a real issue, information systems managers said.

"Data backup is a problem everywhere," said John Woods, PC systems specialist at Chevron Information Technology Co. in San Ramon, Calif. Woods said although excellent and effective tools exist for backing up servers, even desktop users do not have robust tools, let alone remote users.

The question for Datasonix is how much of a market is there. Analysts said the product's real potential might be for shipping audio files, if that technology ever becomes important to businesses.

"It's a really innovative product, and it might bring to the surface needs that people haven't thought of," said Randal Giusto, an analyst at BIS Strategic Decisions in Norwell, Mass. Giusto said he sees it as a way to transfer large data files such as spreadsheets or presentations without having to pay the high telecommunications costs of downloading.

In the meantime, Giusto said the portable tape backup market was "a need right now."

Cost prohibitive

Some users challenged whether tape backup for mobile users is necessary and said the $595 price tag for Pereos was high.

"If the price came down, it has some potential as a backup device, but I don't see mobile people paying $500 to $600 for backing up," said Victor E. Mutnick, corporate vice president at New York Life Insurance Co. Mutnick said he did not know what would be a magic price point for the technology but that buying a new hard drive and using that as a backup might be more cost-effective. New York Life's users have notebooks with replaceable hard drives.

Users pointed out, too, that one reason backup might be a hard sell for mobile users stems from pure human factors.

"The heart of the thing ends up being convincing the end user that backing up is important," Woods said. "Typically they get religion when they lose [data] once."

A bit bigger

Portable tape backup based on larger media is also on the market: Portable Solutions, Inc. in Anaheim, Calif., recently shipped its Autobahn Tape 250, which uses quarter-inch cartridge-Bo tape to store 250M bytes of data at a time. The drive is 4¼ by 8 by 2½ inches and costs $350.

AirSoft offers transparent access to LANs

By Michael Fitzgerald

AirSoft, Inc. has developed a piece of software that promises to make remote users feel as if they never left the office.

AirSoft's AirAccess 2.0 was designed to put remote users on the LAN in transparent fashion. Thanks to clever manipulation of remote packet data, users can switch programs or directories and even do drag-and-drop functions with the same speed as if they were on a local-area node. The user interface continues to shift, while user commands are carried out in the background.

Analysts called AirAccess a breakthrough product.

"They're the first ones that have figured out the detailed technical ramifications of how ... narrowband media, like wireless, impact file exchange architectures," said William Frezza, president of Wireless Computing Associates, Inc. in Yardley, Pa. Frezza said AirSoft's main challenge "will be staying ahead once everybody else gets it."

Just like being there

Built-in caching techniques speed up transactions and also keep a "virtual image" of the user interface intact, even when users perform other functions.

"The key thing is, you use it just like your desktop software," said Jagdeep Singh, chairman, chief executive officer and president of AirSoft in Palo Alto, Calif.

Information systems managers said the product was worth a look.

"That general direction is what we see as needed," said Gene Hengel, director of strategic technologies at Insurance Value Added Network Services in Greenwich, Conn. Hengel, who said he has not seen AirAccess, noted that even in land-line environments, remote users cannot get the same appearance of connectivity as office users.

Step ahead

AirSoft bills AirAccess as able to step above the gaps in the market, which offers products with file transfer, remote control, remote access or remote node capabilities. Version 2.0 adds wired capabilities to Version 1.0.

"What they've done is solve the packet vs. session communications problem," said Andrew M. Seybold, editor in chief of "Outlook on Mobile Computing," a newsletter in Brookdale, Calif. Seybold said effective use of packet radio makes users feel like they are transparently on the network.

One downside, analysts cautioned, is that remote users might run up large phone bills because functions such as downloading are carried out in the background.

AirAccess 2.0 is slated to ship in the third quarter. A client and single-user server version costs $199; a multiuser version, shipped as a NetWare Loadable Module for Novell, Inc.'s NetWare, costs $499. Extra client versions are $99.

DCA integration increases control

By Suruchi Mohan

■ Digital Communications Associates, Inc. (DCA) has announced a Remote LAN Node (RLN) application server that integrates with its RLN communications server to let Novell, Inc. NetWare users switch seamlessly between remote node and remote control.

What impact this integration will have on remote users depends on who you ask. John Scott, a systems administrator at Advanced Technologies Lab in Bothell, Wash., said this server targets anyone who needs more than just electronic mail. It will make a big difference in database access because of the way it handles large volumes of data. It means less work for the administrator, too: Only one kind of configuration will be required for all clients, regardless of the application used.

But not everyone is so bullish about DCA's offering. In the Windows environment, RLN takes up a communications port and does not give it up until the user reboots, said an information systems administrator at a major commercial bank. This can be cumbersome for users who are dialing in to an application offered by another service.

Remote node software essentially makes a remote workstation a node on the network. Remote control software, on the other hand, lets the user control the host through the keyboard.

Application size

The RLN software, which supported remote nodes, limited users to small applications. If they needed to access a large nonclient/server-based application, the traffic over a dial-up phone line made the process slow and cumbersome as large volumes of data and files were moved back and forth.

The application server, which Atlanta-based DCA is getting from OEM Citrix Systems, Inc. in Carol Springs, Fla., addresses this bottleneck. It sends only screens and keyboard strokes over the network, which is what happens with remote control software. The application and files are kept in the application server. As a result, the firm claims, even Windows applications can be run by remote users with 286-based PCs or higher.

The application server by itself gave users remote control, but they had to establish a one-to-one session with the host. With RLN integration, the server can support up to 10 users.

The integration does not mean users can use only remote node technology. They can access the RLN communications server through RLN client software running in their machines. However, all access to the application server must be through the communications server. To connect to the application server, users are required to load DCA's AppLink client software.

The application server software will become available this month and will retail for $2,950 for 10 users.

Briefs

Workflow added

Saros Corp. in Bellevue, Wash., will use the workflow engine from Action Technologies, Inc. in Alameda, Calif., to add workflow capabilities to its document management system. The Saros system is called Mezzanine.

Call for help

Unisys Corp. introduced Unisys CheckPoint, a broad set of telephone help desk services for PCs and Macintoshes as well as LAN environments. The services are available now on a contract basis.

X terminal view

Human Designed Systems, Inc. in King of Prussia, Pa., has introduced the ViewStation Ultra X terminal line, which the company says supports both Macintosh and Windows applications by reading PC-compatible floppy disks.

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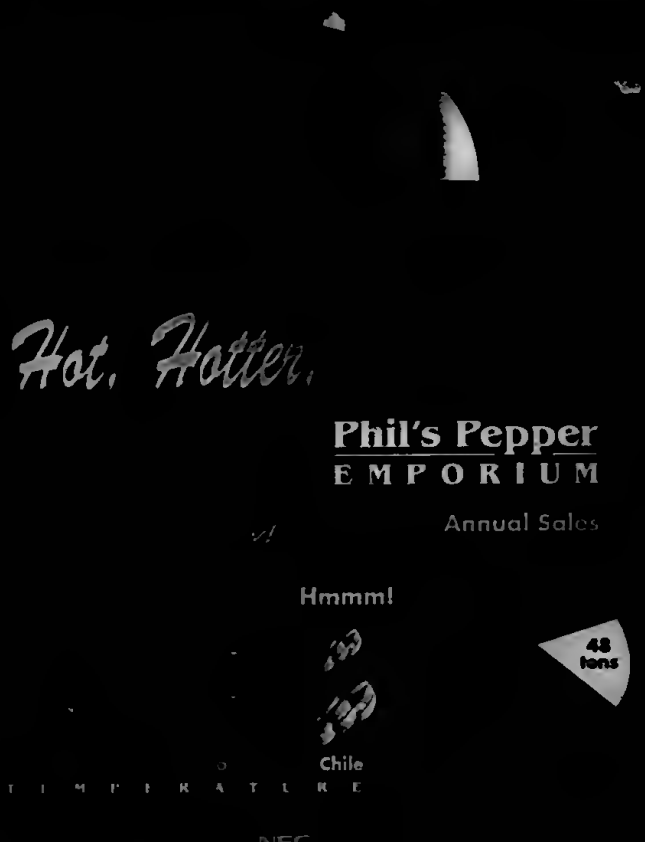

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NEC

Compaq hopes servers take it to big leagues

By Jaikumar Vijayan

In what analysts said they see as an attempt by the company to position itself as an enterprisewide vendor, Compaq Computer Corp. has announced the availability of a rack-mountable server family.

The ProLiant 1000R, 2000R and 4000R rack-mount servers, which are vertically integrated versions of existing ProLiant systems, are available in two sizes. All can hold up to six ProLiant servers in standard rack-mount cabinets.

Server cabinets

The new ProLiant servers are available in two sizes: The 22U is about 4 feet tall and can hold up to three ProLiant 1000R, 2000R or 4000R servers. The 42U is about 7 feet tall and can hold up to six of the same servers.

"It's more of a message than anything else. What Compaq is trying to do is signal to MIS that they want to be an integral part of the enterprise network," said James Greene, research analyst at BIS Strategic Decisions in Norwell, Mass.

According to Greene, Compaq is trying to expand beyond its image as a desktop and PC-server vendor and get itself seriously considered as a vendor prepared to address information systems needs for consolidation and manageability.

"The message is, we can play in this league too," he said.

The new servers use a standard form factor aimed at allowing IS departments to install third-party components such as bridges, routers and hubs into the racks themselves. In addition to housing the servers, the racks offer integrated storage options that can hold up to seven hot-pluggable hard drives for a total capacity of 14.7G bytes as well as a monitor, keyboard and uninterruptible power supply.

The systems also feature Rack Builder, a Windows-based software application that allows users to select components and prototype different rack configurations.

A rack-mount form factor, such as Compaq's recently announced servers, "makes systems administration easier because more capabilities can be integrated in one relatively inexpensive hub," said Tom Kucharvy, president of Summit Strategies in Boston.

The servers, which are available immediately, will start shipping with an entry-level price tag of less than $6,000 for an Intel Corp. 66-MHz 1486DX2-based ProLiant 1000R.

Briefs

Group promotes PA-RISC

The Precision RISC Organization, an industry consortium that promotes Hewlett-Packard Co.'s PA-RISC chip architecture, has launched a compatibility testing program that spans all PA-RISC-based machines. The new Pro Conformance program is based on common application programming interfaces and application binary interfaces. Certified by a software test suite that is due to ship by year's end, the conformance program aims to expand the pool of applications that can run on any PA-RISC-compatible system. Precision RISC Organization members include HP, Hitachi Ltd., Convex Computer Corp. and Stratus Computer, Inc., the group said.

PictureTel adds tools

PictureTel Corp. added an application-sharing component to its PictureTel Live family of PC-based videoconferencing systems last month at PC Expo '94. Called Live Share, the product will be available early this month as a free upgrade; after 90 days, it will cost $140 per copy.

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[redacted]

HT Research, Inc. has announced TeamPro HT-4000, a computer designed specifically for workgroups.

According to the Tustin, Calif., company, TeamPro HT-4000 integrates four 386, 486 or Pentium CPUs in a single unit and provides security, workgroup tasking, system interchangeability, network expansion, interactive conferencing and multiple-host device sharing.

Workgroup tasks can be executed by any idle CPU in the workgroup, and users can access CD-ROMs as local drives, lessening demand on the server.

The system also ships with four monitors, four keyboards, a team chassis, SCSI-based workgroup communication cards, workgroup software and a SCSI-II-controlled CD-ROM drive.

TeamPro HT-4000 costs $6,000.

▶ *HT Research*
(714) 566-9100

Up & Running Cnmputer Consultants, Inc. has announced Artificial Work Environment 1.1, a Windows-based collaborative groupware product.

According to the Long Beach, N.Y., firm, Artificial Work Environment 1.1 provides users with a comprehensive workflow development and deployment system where documents, mail and tasks are manipulated in a consistent manner.

The product is based nn 11 simple commands found as buttons across the top nf every screen. It has no drop-down menus, overlapping windows or nested dialog boxes.

Features include an enhanced data schema and form design tool, document imaging with support for more than 85 scanners, parallel workflow capability and collaborative computing extensions.

Prices range from $795 to $6,250, depending on the number of users.

▶ *Up & Running Computer Consultants*
(516) 933-8931

Shapeware Corp. has unveiled Visio Express for Lotus Development Corp.'s SmartSuite, a special version of the Visio Express, drop-and-drag drawing program designed for 1-2-3, Ami Pro, Freelance Graphics and Approach users.

According to the Seattle firm, Visio Express lets users draw and diagram directly within the SmartSuite applications and integrate business graphics.

Features include support for Notes, Microsoft Corp.'s Object Linking and Embedding 1.0 and six stencils to create flowcharts, block diagrams, organizational charts, time lines and maps.

Visio Express fnr SmartSuite costs $79.

▶ *Shapeware*
(206) 521-4500

Byte Ltd. has announced that ByteQuest, its production-level document imaging system, has been integrated with Lotus Development Corp.'s Notes.

According to the Ottawa company, the product lets Notes users attach image folders containing an unlimited number of documents and then retrieve and route these documents any time when working within Notes.

ByteQuest for Nntes lets users access a large central repository of images or distributed repositories of images on workgroups in the enterprise network.

Prices range from $500 to $2,500, depending on the number of users.

▶ *Byte*
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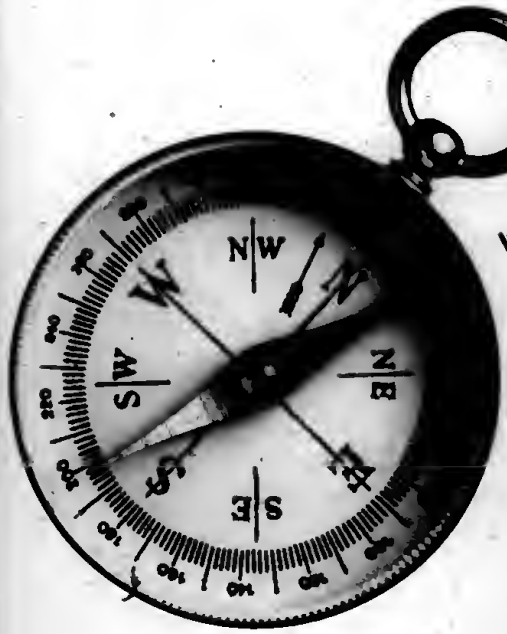

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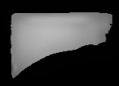


BOB FISHER

ATM prices fall, but standards suffer

By Stephen P. Klett Jr.

■ Users eager to implement Asynchronous Transfer Mode (ATM) networks have received both good news and bad news in the past month.

First, the good news.

ATM prices are plummeting as more vendors announce their ATM migration strategies and early products. Prices per ATM connection have dropped from $2,000 to $3,000 levels to $1,000 and below.

For example, IBM recently unveiled an ATM concentrator and 25M bit/sec. adapter that can provide up to 12 ports of ATM connectivity for roughly $900 [CW, July 4]. Connectware, Inc., an AMP, Inc. subsidiary in Richardson, Texas, last week unveiled 100M and 155M bit/sec. ATM adapters for less than $700, as well as a 16-port ATM hub for $12,000, or $745 per port.

In addition, UB Networks, Inc. in Santa Clara, Calif., recently announced an ATM switch that falls just short of $1,000 per port. Fore Systems, Inc. in Pittsburgh and Newbridge Networks, Inc. in Herndon, Va., have also cut prices on their ATM products by as much as 50% [CW, May 23].

Standards quagmire

"We expect to see more and more second-tier companies such as Connectware move down ATM price points, which will help attract more mainstream users," said Charlie Robbins, a vice president at Aberdeen Group in Boston. "However, better prices are not enough. Products need to be interoperable, and we're still slogging through the standards process."

Hence the bad news.

Despite redoubled efforts by the ATM Forum, a vendor and user consortium, progress on various ATM standards specifications has been sluggish, and many may miss their end-of-year completion goals.

Hit and miss

According to observers, the LAN emulation standard is on track for completion by year's end or early next year. However standards for congestion management/traffic control and a private network-to-network interface may miss their end-of-year completion goals.

"The ATM Forum is faced with a major problem in that it doesn't have enough research available to make a decision, which could cause some specifications set for completion by the end of year to slip into next year," said Ron Jeffries, editor of the "ATM User" newsletter in Santa Maria, Calif., and an ATM Forum member.

The ATM Forum is dealing with a double-edged sword: More equipment is needed in the field to help determine which traffic control and interfaces work best, but users do not want to get involved with ATM until standards have been set, Jeffries said.

For example, while it is encouraged by falling prices, Norwest Mortgage in Minneapolis is looking at switching rather than ATM to boost performance in its Token Ring and Fiber Distributed Data Interface network, according to Matt Jacoby, a senior network engineer. "ATM products need to become more mature — and standards definitely need to be set — before we'll consider them seriously," Jacoby said.

Not so standard

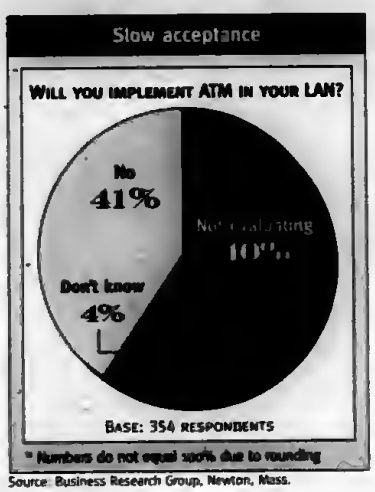
Another possible stumbling block is the arrival of new versions of approved standards that may be incompatible with their predecessors.

For example, UNI 3.0, a specification for a standard user interface to ATM networks, was approved almost a year ago. However, Version 3.0 must be updated to 3.1 to include a signaling change made by the International Telecommunications Union. Products based on 3.0 will not be compatible with ATM products using Version 3.1.

"While not a major concern because the installed base of ATM products is not very big, this could be a big deal for those users already using ATM today," Jeffries said.

Money motivator

More than half of 33 Fortune 1,000 companies surveyed by Forrester Research, Inc. in Cambridge, Mass., cited lower costs and more standards as the primary factors that would accelerate their ATM plans. Most planned to have production ATM networks in place by 1997.



Source: Business Research Group, Newton, Mass.

[redacted]

Elisabeth Horwitt

Not on my Internet

The recent uproar about commercial yahoos taking over the Internet reminds me of my own reaction when I recently found "my" seaside community (where my family owns a house and I grew up) overrun with loud, beer-drinking dudes and dudettes.

How dare they come here, I and Internet old-timers whine. This is a special community whose beauty they could never appreciate; they are ruining it with their boorish behavior.

Both the Internet and my seaside paradise are endangered species; the problem is how to preserve them without making them the exclusive turf of a few privileged elite. Both the Internet and my particular community are supposed to be open to the public.

The most obvious practical solution in both cases is to implement some rules and enforce them. My community has a laundry list of rules, ranging from "no beer drinking on the sidewalks" to "no more than X number of unrelated people can rent a house together." To many, these rules are onerous; however, they are the main reason why I still enjoy the area.

The Internet, too, needs rules — real rules enforced by an outside authority, not by user vigilantes. The dangers of users taking matters into their own hands are dramatically illustrated by the recent furor surrounding two lawyers who broadcast commercial messages on the Internet.

A clever hacker sent out "cancelbots" that automatically deleted the messages the law firm sent out. His peers apparently applauded rather than flamed him. However, there are scary implications in allowing people to destroy messages that do not meet their personal criteria.

Some government agency or specially formed nonprofit organization needs to come up with some guidelines before chaos — or mob rule — takes hold on the Internet.

Horwitt, *page 60*

Surfing on the Internet

A semiregular column with items of interest and amusement from the Internet.

It was bound to happen sooner or later — a Yellow Pages directory for the Internet. *The New Riders' Official Internet Yellow Pages* with more than 10,000 listings is available for $29.95 from Macmillan Publishing Co. in Indianapolis. The publication looks remarkably like the real thing, down to the yellow paper stock.

*****

But finding what you want on the Internet continues to be a hassle. Endless menus pointing to still more menus is not our favorite way to locate information.

Enter Personal Library Software, Inc. in Rockville, Md., which has adapted its text-search engine — already used on the America Online service — to work with the Mosaic browser and Internet databases. The new PLServer software acts as a front end for your database and allows visitors to write natural language (or Boolean) queries to retrieve useful nuggets of text.

The license for noncommercial users, such as government agencies and universities, costs $10,000 per year. Pricing for commercial users has not been set.

*****

Speaking of directories, update your phone books under the Bay Area Regional Research Network (BARRNet). Southern California's venerable Internet access network. Last month, Bolt Beranek and Newman, Inc. in Cambridge, Mass., the owner of New England's NEARnet Internet access network, agreed to acquire BARRNet from Stanford

Internet, *page 60*

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Dun & Bradstreet Software's mission is to help its customers increase "information convenience" for better decision-making.

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John L. Pepe
Senior Vice President
Customer Solutions Development
Dun & Bradstreet Software

A New Class of Applications

D&B Software developed SmartStream using an approach called the Open Application Framework (OAF), a three-tiered architecture for quality application development.

The base of OAF is the foundation layer, which combines the data warehouse, graphical user interface, communications and workflow utility tools that offer a robust, functional base. From this common set of technologies, the company developed a set of transaction-processing applications to meet enterprise information needs in Financials, Manufacturing, Distribution and Human Resources. The third tier includes cross-organizational analysis tools, like SmartStream Decision Support and SmartStream Budget, that turn transaction information into material for better decision-making.

SmartStream's foundation architecture is based on industry-standard technologies such as Microsoft Windows, Sybase SQL Server, PowerSoft PowerBuilder and TCP/IP. These technologies form an "enabling platform" that offers consistency, integration with standard mail and imaging tools, and greater flexibility in hardware and communications choices.

Customers see this open technology foundation as a key SmartStream strength. Phillips Cables Ltd. is one of Canada's largest manufacturers of wire and cable products with over a thousand employees and seven manufacturing facilities across Canada. Bob Culmer, Phillips' Director of Information Technology, recently chose to implement Financial Stream and SmartStream Decision Support for the company's accounting information needs, in part because of the products' technical architecture.

"The technologies D&B Software uses for SmartStream — Windows, Sybase SQL Server, PowerBuilder, TCP/IP — are also the technologies on which we've standardized for internal application development," says Culmer. "That means we'll have greater possibilities to integrate SmartStream with our own applications, and better internal support capabilities by working with a platform our developers already understand."

By starting with OAF, D&B Software was able to design essential features into SmartStream, such as a true distributed architecture. Both data and process can be allocated across multiple computing locations, so customers can easily distribute headquarters' accounting applications to other departments in their organizations. Each user's information and activity needs are handled by the individual client PC, which presents the user with specific task-oriented windows in response to the activities and requests of other users. Common services such as Scheduling, Security and Help are available to all SmartStream applications, easing support needs and increasing efficiency.

Complementing Technology with Services

D&B Software also developed a set of services and support offerings to complement its products and allow customers to gain maximum benefits.

The company's support solutions start with a world-class technical support center for front-line help, available seven days a week, 24 hours a day. D&B Software's support staff has the expertise to provide assistance not only with its own proprietary technology, but also with all the underlying third-party technologies in the SmartStream platform. In addition to standard phone support, customers can obtain extensive

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electronic support through SmartStream Assistant, a facility that allows remote diagnostics and instant distribution of software enhancements.

The company also offers services to ensure that customers realize the greatest return on their SmartStream investment. Through its own organization and business partnerships with Price Waterhouse, Andersen Consulting and other firms, the company offers a full range of consulting services, from system integration to the use of SmartStream as a platform for business process reengineering. D&B Software's education specialists provide comprehensive staff development and training programs for end users.

But perhaps the company's most unique services are its programs that fulfill a commitment to "sensible migration" to client/server. Through its research and experience, D&B Software knows the key issues customers face in the transition to client/server computing are managing time, expense and risks. The company's migration-assistance products and services provide ways to reduce problems with all three.

D&B Software's Customer Choice program provides lock-in maintenance pricing and preferred pricing of new technology for "on-maintenance" customers. SmartStream's modular design even provides a form of migration assistance, allowing customers to proceed to client/server at their own pace, gradually implementing new technologies that work side-by-side with existing mainframe applications.

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Starting from an integrated view of an entire enterprise's information and process needs, D&B Software's **SmartStream** product suite covers the most intensive data requirements of an organization:

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- **Distribution Stream** to manage all major "in and out" functions, including order management, quotations, inventory, purchasing and shipping.
- **HR Stream** to handle employment information such as personnel, payroll and benefits.

All of these streams feed into one with **SmartStream Decision Support**, an information-integration platform that lets customers analyze internal and external information. Decision Support helps management throughout the company access and study information that drives the business, with the ultimate goal of better decision-making for greater productivity and valuable results.

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HP floods market with X terminal wares

By Jean S. Bozman

Hewlett-Packard Co. is coming on gangbusters in the X Window System terminal market, determined to become No. 1. But the pace of X terminal introductions since last fall has been dizzying, HP users said, as they consider three new models: Envizex, Entria and Aptrex.

Last fall, HP introduced Envizex, a workstation-like terminal that supports multimedia and high-resolution screens as a low-cost companion device for HP's Unix workstations. Entria debuted this year as an upgrade for users' character-based terminals. That was followed last month by another low-end model called Aptrex aimed squarely at the Sun Microsystems, Inc. workstation market.

Industry analysts said HP's X terminal push is fueled by the goal of surpassing the unit sales of Network Computing Devices, Inc. (NCD) in Mountain View, Calif. HP sold more than 52,000 X terminals last year, said Greg Blatnik, a vice president at The X Business Group, Inc. in Fremont, Calif. NCD shipped 68,000 units. However, HP has made more money on its sales, according to International Data Corp. (IDC) in Framingham, Mass.

1993 Worldwide X terminal market

Total market: $643 million	Market share
Hewlett-Packard	22.4%
Network Computing Devices	21%
Digital	12.6%
Tektronix	10.4%
IBM	9.8%
AT&T Global Information Solutions	5.4%
Sun Microsystems	2.5%
Others	16.1%

Source: International Data Corp., Framingham, Mass.

In targeting Sun's large workstation base with the Sun-compatible Aptrex line, HP is also taking on its biggest workstation rival. Independent vendors have done well supplying X terminals to the Sun market HP is now targeting, analysts said.

"Tektronix and NCD have both targeted the Sun market and been successful," said Eileen O'Brien, manager of terminals research at IDC. "But HP has undercut them all as far as pricing is concerned."

HP's strategy may well work, but to become No. 1, HP must take market share away from its competitors, including Sun, analysts said. "They are doing everything necessary in order to be successful," Blatnik said. "But they need to expand by going after business that is outside the HP core business, where HP already has loyal customers."

Sun seekers

To attract Sun users, HP added a Sun look-and-feel to the Aptrex unit, including a Sun-style keyboard and support for Sun's Open Look user interface.

"The reason people [who owned Sun workstations] were not willing to buy the HP X terminals was that they had a standard PC keyboard or an HP keyboard," explained Doug Eltoft, director of operations for the computer network at the University of Iowa's engineering college in Iowa City. The university site has both HP and Sun workstations.

HP's new X terminals are being studied at many user sites. "The technology is progressing so fast that it's really hard to accommodate ourselves to it," said Andrew Lyszkiewicz, manager of geographic information systems data at the Municipality of Metropolitan Toronto's Corporate Services Department in Ontario.

To handle the speed of technical change, Northrop-Grumman Corp.'s Commercial Aircraft Division in Hawthorne, Calif., is leasing its workstation and X terminal equipment. Northrop is using 140 Envizex X terminals.

IS managers at the Northrop site, which makes fuselage parts for Boeing Corp. 747 jetliners, prefer X terminals to simplify management of Unix computing as part of a mainframe-downsizing project.

"To reduce costs, we have a very small operations staff," said Joe Dugan, the site's business systems program manager. "We did not want to give everyone workstations and have to contend with security, configuration problems and a lack of control about which applications were running."

Gordon Kerr, senior vice president of MIS at Hyatt Hotels and Resorts in Chicago, has relatively few X terminals at his site, which uses multiple HP servers as part of a reservation system. But they could come into play as alternatives to IBM-compatible PCs at the reservation center once the PCs come off lease at year's end.

"If the PC is just acting like a client front end, are you better off with a bunch of X terminals talking to a local server?" Kerr asked. Provided that the X terminals get their applications from local Unix servers over high-speed networks, the answer may well be "yes," he said.

Xtra benefits

X terminals hold the promise of shaving IS budgets by displaying centrally stored applications, which are typically hosted by Unix servers. Purchase prices can be 30% to 50% less than Unix workstations, and there is increased data security because users can access only centrally stored software.

There are IS benefits, as well, including better control over end-user computing than with conventional PCs. "X terminals are easier to administer, and overall life cycle costs are certainly well below that of a workstation," said The X Business Group's Greg Blatnik. "There's no operating system on your desktop, no mass storage and no local applications."

However, users also have the option of converting their PCs into X terminals with a new generation of PC-to-X server packages priced at several hundred dollars, analysts said.

—Jean S. Bozman

Horwitt

CONTINUED FROM PAGE 57

Clearly, this will be no easy task, given that the Internet is really a loose group of regional networks, including international groups, that are not governed by the U.S. constitution. And its user population grows increasingly diverse.

Furthermore, policing the various forums and bulletin boards will probably have to be a grass-roots operation in order to be effective. Perhaps each subnetwork could have an informal body of Internet users who take complaints and can revoke networking privileges for repeat offenders.

The original free spirits may object to formal regulations on their net, but the sad truth is the old "rule by informal consensus" tends to break down once a community grows to a certain size and level of diversity.

Ask the Internet Engineering Task Force (IETF). Once a small organization of network engineers devoted to the care and feeding of TCP/IP, the IETF used to hammer out quick, dirty but effective fixes and enhancements in a matter of days.

Now TCP/IP has moved beyond the engineering, government and scientific community, just as the Internet has. And the IETF has to consider the concerns of the vendor community and their customers when it comes up with the next generation of TCP/IP. The protocol's fast-growing corporate user base will not be satisfied with a quick and dirty solution to TCP/IP's current addressing and routing problems.

Nevertheless, the IETF is still trying to get that next-generation IP by consensus — with the result that the process is taking years.

Horwitt is *Computerworld*'s senior editor, networking.

Internet

CONTINUED FROM PAGE 57

University for an undisclosed sum.

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Individuals, not organizations, will want to check out a new, free service from Global Network Navigator in Sebastopol, Calif., a leading Internet catalog and on-line service provider. In late June it launched the Personal Finance Center (PFC).

The service includes delayed stock quotes, mutual fund data in chart form and the 1994 Securities and Exchange Commission filings, as well as published interviews and expert columns on finance. The cost of PFC is being picked up by advertising sponsors. Send an E-mail inquiry to info@gnn.com.

*****

Personal finance is fine but beware of money schemes across the net. State securities regulators held a June 30 press conference to warn that investment swindles have made the leap to the Internet and commercial on-line services. The illegal schemes include stock manipulation and electronic chain letters that turn into illegal pyramid scams.

Seven states have launched a total of more than two dozen investigations into on-line investment schemes, according to the North American Securities Administrators Association in Washington. An investor bulletin on the topic is available by sending E-mail to the Internet address: schemes@nasna.mailer.net.

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If you lust for love, not money, the *Electronic Journal on Virtual Culture* wants to hear from you. The journal is seeking essays for a section in this month's issue that will deal with "Romance on the Internet." Is it just a fad? Is romance an appropriate use of the Internet? How are virtual relationships different from face-to-face ones?

Send E-mail on the topic to James Shimabukuro, editor of the journal's "Virtual Square" section, at jamess@uhunix.uhcc.hawaii.edu.

—Mitch Betts and Ellis Booker

Note: Companies with Internet-related products or services or readers with neat net-related info are encouraged to contact us electronically at ellis@cw.

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Study predicts leap in public data services

By Ellis Booker
CHICAGO

The public data services market will quadruple to more than $4 billion by 1999 and sustain a compound annual growth rate of 21.7% from 1992 to 1999, according to a recently released research report.

The Frost & Sullivan, Inc. study argues that the business need for broadband connectivity and support for native LAN protocols across wide areas will fuel the growth in public data services, a $1.1 billion market in 1992.

The report reaches the following conclusions about the current suite of public data services:

- **X.25:** Revenue from this granddaddy protocol, already close to $1 billion in 1992, will more than double in 1999.
- **Frame relay:** An economical alternative to private lines for interconnecting fixed groups of LANs, frame relay will yield revenue of more than $300 million in 1996 and nearly $600 million in 1999.
- **Switched Multimegabit Data Service (SMDS):** This "connectionless" public service ranges in speed from 56K to 45M bit/sec. It has already won some users and will reach revenue of more than $100 million in 1996. But the study says SMDS' fortunes will be stunted as customers await commercial Asynchronous Transfer Mode (ATM) networks.
- **ATM:** ATM revenue — defined as revenue from any service or application that passes ATM cells to a carrier — will start slowly at $7 million this year, grow to $28.3 million in 1995 and reach more than $300 million in 1999.
- **Integrated Services Digital Network (ISDN):** Following an earlier bullish report, Frost & Sullivan said ISDN will enjoy "major growth" and will account for almost 20% of total public data service revenue in 1999.

Frost & Sullivan also noted the changing nature of competition among networking carriers with the blurring of the distinction between voice and data carriers and the seeming inevitability that regulatory changes will allow local phone companies to join the competitive fray.

Baby Bell boosts cellular channel

BellSouth Corp. recently said it would move its cellular network to Time Division Multiple Access (TDMA) digital technology.

TDMA divides cellular channels into parts, increasing the number of calls they can carry by as much as three times. This capacity is crucial in areas with heavy cellular phone traffic.

Ben Hokum, BellSouth's executive vice president, said the regional Bell operating company would spend $100 million to deploy TDMA across its cellular networks, currently spread over 15 states. It will deploy TDMA switches from AT&T Corp., Ericsson, Inc. and GM-Hughes starting this winter. The rollout is expected to be completed in 18 to 24 months.

"TDMA offers more features for consumers and better voice quality, and it starts to offer some of the things [Personal Communications Services] is offering," said Iain Gillott, an analyst at Link Resources, Inc. in Framingham, Mass.

The BellSouth move also guarantees that cellular users in the future will not be able to conduct all their calls digitally because TDMA is incompatible with the rival Code Division Multiple Access (CDMA) technology favored by US West, among others. Analysts said incompatible networks would default to analog communications and thus cost digital cellular users the extra features available from TDMA and CDMA.

— *Michael Fitzgerald*

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And database managers who'd like to get home sometime before the farm report.

[The dawn of Windows NT and NEC MIPS RISC computing.]

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Elan Computer Group has introduced Softwatch, a network software management tool.

According to the Mountain View, Calif., company, Softwatch allows users to receive consolidated reports on all software applications and monitor and control networked software usage.

The product was designed to work with any Unix application and can be used to reserve licenses for individuals, groups or machines that need priority when running specific applications.

Prices start at $495.

▶ *Elan Computer Group*
(415) 964-2200

Advanced Computer Communications, Inc. has introduced Danube, a self-contained remote-access router.

According to the Cupertino, Calif., company, the router was designed to give Ethernet networks at remote sites direct access to corporate resources.

Danube is Plug and Play-capable and features full protocol support, data compression and the company's bandwidth optimization technology to maximize wide-area network throughput.

A single, autosensing Ethernet connector provides connectivity to a 10Base-T network through an RJ-45 connector or a 10Base-5 network through an attachment unit interface connector.

Danube costs $1,995.

▶ *Advanced Computer Communications*
(408) 366-9600

Notable Technologies, Inc. has introduced AirNote, a wireless messaging product.

According to the Oakland, Calif., company, AirNote lets mobile users send computer-typed messages and receive electronic-mail, Internet and phone messages on a test pager.

E-mail messages can be sent from any computer with Internet access by addressing them to the AirNote pager's unique Internet address. Messages can also be sent via telephone through an 800-number.

AirNote comes with AirNote software, a text pager, network and operator service activation and an Internet address.

AirNote costs $349.

▶ *Notable Technologies*
(510) 208-4400

Datawatch Corp. has introduced Virex Administrator, an antivirus software package.

According to the Durham, N.C., company, the product provides centralized detection and repair of Macintosh viruses anywhere on Apple Computer, Inc. AppleTalk networks.

Virex Administrator lets users remotely scan computers for viruses and then repair virus and Trojan horse infections. The product also maintains an audit trail of all scans, updates, detections and repairs.

Prices start at $200.

▶ *Datawatch*
(919) 549-0711

The Software Group Ltd. has announced NetcomRelay, a Unix LAN-interconnection product for frame-relay networks.

According to the Woodbridge, Ontario, company, the product allows Unix PCs to transfer TCP/IP LAN traffic via frame-relay links.

NetcomRelay is bundled with an implementation of the Internet Standard RFC 1490 for interconnecting TCP/IP stacks over a wide-area network.

Features include a choice of adapter cards and an application programming interface to frame-relay services.

NetcomRelay costs $2,500.

▶ *The Software Group*
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o that databaae managers could get home from work at a reaaonable hour, the developera of Windowa NT™ watched many sunrises from behind their MIPS RISC computers.

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Market update

Dodge fights for slot in client/server arena

By Rosemary Cafasso

In the client/server applications market, The Dodge Group, Inc. is barely a blip on the radar screen.

By now, The Dodge Group, founded by Frank Dodge of McCormack & Dodge fame, has little chance of seriously challenging its biggest competitors. Industry estimates show that SAP America, Inc. brought in $90 million in revenue last year, and Oracle Corp. raked in more than $50 million. Meanwhile, The Dodge Group has built up a customer base of six accounts worldwide.

Nonetheless, some industry analysts and customers said the Waltham, Mass.-based company, which will be 3 years old next month, still has a fighting chance in the client/server application market. The big reasons: The marketplace is young enough to give small companies a shot, and The Dodge Group knows what it is doing when it comes to financial software.

"The initial strategy was to go very high-end," said Ed Black, a senior consultant at Aberdeen Group in Boston. "It's a very small market they are targeting, and I think the reputation of Frank Dodge will serve well in that niche market."

Steady swell

Gartner Group, Inc. estimates that the client/server applications market generated about $250 million in revenue last year and will swell to $1.2 billion by 1998.

Roadblocks ahead

Even so, The Dodge Group has a tough road ahead. It recently lost one of only three U.S. customers when Charles Schwab & Co., which apparently thought highly of the software, discontinued its use because of a strategy change.

Evelyn Dilsaver, a corporate controller at Schwab, said the company put The Dodge Group's general ledger software on hold because of a reorganization that called for revamping some existing technology instead of replacing it.

"In my heart of hearts, I believe they have the right ideas," Dilsaver said of The Dodge Group. "They have really thought through the general ledger process. When we are ready to go back in, that's what we would be looking for. We may come back."

Industry observers said that if The Dodge Group does have a fighting chance, its weapon will be the financial systems know-how that Frank Dodge and his crew possess.

Working with developers

The U.S. headquarters of Sun Life Assurance Company of Canada in Wellesley, Mass., is currently testing the general ledger software and so far is upbeat about its performance. Sheila Osler, director of information technology, said she prefers dealing with a small company such as The Dodge Group because her staff gets to actually work with the software's developers.

Sun Life uses a mainframe-based general ledger package from Dun & Bradstreet Software and did not elect to evaluate its client/server application.

"There's more opportunity to get what we want done," Osler said of The Dodge Group. "If you go to a big company, it's going to be, 'This is what we have to offer; here you go.' With [The Dodge Group], we can help them with the design, and the software meet your business requirements."

Claire Gillan, an analyst at International Data Corp. in Framingham, Mass., said The Dodge Group is "definitely committed to doing something right" but added that the several-year effort it took to launch the first product will likely cost the company.

"If there is one thing that Frank has going for him, it is that he is making a really honest attempt to [deliver] a really responsible client/server product. But I think that he's been so focused on that that he's missing other opportunities," Gillan said.

Security big issue in new MVS/DCE release

By Craig Stedman

■ IBM has started shipping a more complete MVS/DCE implementation to customers who are testing it and said the distributed computing product remains on track for general availability in the fourth quarter.

However, robust security features will not be ready before late 1995, according to IBM.

Even those will be limited to security "basics" that are needed to enable users to log in at any node on a network based on the Open Software Foundation's Distributed Computing Environment (DCE) technology, said Pete Beggs, planning manager for distributed computing at IBM's Toronto software laboratory.

A "more comprehensive exploitation of security" will follow in 1996 and 1997 as IBM fine-tunes integration between DCE and its Resource Access Control Facility (RACF) software, Beggs noted at a recent briefing. "There are a lot of complex problems to fix," he said. "Invention is needed."

Skip the slippage

Mainframe customers interested in implementing DCE said tight security will have to be offered before the technology can be put into production in their shops. But most added that IBM's development schedule should be acceptable, provided there is not much slippage in the rollout process.

"As always, if we had this software 10 years ago, life would be wonderful," said Luther Perry, information services director for Santa Cruz County in California. "But DCE looks like the best horse to be riding. I think it will have better security than other alternatives, even if it's not good security."

DCE's potential for tying mainframes to other systems such as IBM's AS/400 and Unix platforms while providing single network log-in support "is real important to us," Perry added. He said the county plans to look closely at a VM/VSE implementation of DCE that IBM is developing for shipment after MVS/DCE is released.

"Where we want to go is to a single log-in to the network, and it's not going to be a simple process" for IBM to provide that, noted Michael Guidry, a technical adviser on architectures at Phillips Petroleum Co. in Bartlesville, Okla. Phillips, which is testing MVS/DCE, expects to wait a full year between its release and IBM's initial integration of that product with RACF, he said.

Looking for security

However, the promise of robust security "is probably the biggest thing that IBM brings to the table" with MVS/DCE, Guidry said. Phillips likely will not start putting DCE applications into production on its mainframes until the second quarter of next year, which maps acceptably with IBM's plans, he added.

Royal Bank of Canada is also interested in making use of DCE at the mainframe level, but any implementation of the technology is still "three to five years away," giving IBM time to flesh out the product, said John Wood, vice president of computer and network services at the Toronto-based bank.

Providing user authentication services that could function across different-computer platforms "is one of the bigger issues" standing between DCE and widespread user acceptance, according to Jamie Lewis, president of The Burton Group, a consultancy in Salt Lake City.

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Planning for platforms

IBM's plan for implementing DCE across various platforms includes the following elements:

• MVS: Along with the base MVS/DCE software, IBM in the fourth quarter will ship DCE remote procedure call interfaces for its CICS and IMS transaction monitors, which will translate mainframe Cobol code into C for use at the client end. CICS and IMS will also be able to use DCE's security and administration capabilities. VM and VM/VSE versions of DCE are also in the works.

• AS/400: A beta-test program is starting for an initial implementation that will let AS/400s participate as nodes on DCE networks, although not as DCE servers. The DCE code is scheduled to be included in an OS/400 operating system release due out in November, but IBM could separate it for later shipment if necessary, officials said.

• AIX: An AIX/DCE release is already available. IBM recently announced support for replicating security databases under AIX, plus automatic network and storage backup capabilities for clustered RS/6000 systems using DCE.

• OS/2: IBM plans to add DCE directory and security features to its LAN Server software and its implementation of Novell, Inc.'s NetWare within the next year. Those products will also get support for running distributed file and print applications within the same time frame. In addition, IBM is developing custom gateways linking Notes workgroup software to DCE for a small number of customers.

DEC weighs software unit sales

By Mary Brandel

Digital Equipment Corp. cast off another old-time software system recently, selling full rights to the PDP-11 operating system, layered software and related networking products to Mentec, Inc. in Lowell, Mass.

This type of deal, in which a software company takes on the development work for a Digital software system, is one that analysts and resellers say will likely be repeated in the coming months.

"They are, in effect, outsourcing their software development to third-party companies like ours," said Dan Esmunson, president of Touch Technologies, Inc. in San Diego. The company recently purchased DECcalc and DECslide. "Digital's goal is to focus on providing the hardware engines to those software programs."

The deals are also indicative of what many analysts and customers see as Digital's desire to disband much of its software operations. "DEC used to be first and foremost a technology and software company," said Dan Smith, senior network analyst at the University of New Orleans. "Now they're trying to get out of the software business. That's a disappointment."

The company has made clear that it intends to whittle down its software offerings and concentrate on its core competencies. Beyond operating systems and client/server middleware, opinions vary as to just what those core pieces might be.

Resellers interviewed recently said they are aware of a large number of Digital software programs on the block, from installed-base products such as PDP-11 to layered software, languages, a bevy of little-known programs and software developed for internal use at companies.

Clearance catalog

Digital has circulated a list of lesser-known products available for licensing in a document titled, "Technology to Go."

The list includes "a mixed bag of products Digital has developed for internal use or that don't suit their direction," said Greg Casto, executive director of the Digital Dealers Association. The deals may include the sale of source code, customer lists or marketing support and sometimes even the staff that goes with the product.

Digital denies it is "shopping around" software but acknowledges it is looking at its portfolio of products and deciding on places to invest or divest.

The Mentec and Touch deals do indicate that Digital is trying to fulfill Chief Executive Officer Robert Palmer's promise to find partners that would continue to invest in the software.

"Our plan is to add features" to the PDP-11, said Chip Charlot, strategic programs manager at Mentec. "There are an awful lot of customers looking to get another six to 10 years out of this system." Digital had been doing maintenance releases on all the PDP-11 software but had not added feature enhancements, Charlot added.

Observers said they hope these sales are indicative of the fate of larger, more strategic applications such as Rdb, All-In-1, Linkworks, Pathworks and DECnet. Digital would not comment on whether it intends to divest of those systems, but rumors are rampant and users have taken note.

"People are concerned," said Tony Carrato, who represents the Digital Equipment Computer Users Society to the Open Software Foundation. Customers are wondering, "Are they going to kill off a major product that I've invested in?" he said.

Some analysts expect Digital to announce sell-offs this month, but confusion abounds. "I can't figure out how they'd disaggregate Rdb," said Keith Hare, a developer at JCC Consulting in Grandville, Ohio. "Their EDI software uses Rdb for scheduling, and Digital's defragger uses Rdb. There are 25 to 50 software products that have Rdb nestled in underneath them."

On the block

The following products appeared in a document listing software that Digital is willing to license or sell:

- **Polycenter Licensing System.**
- **Stars:** A VMS-based text retrieval system.
- **DECtree:** A DECwindows-based tool to create decision-tree-based applications.
- **The Local-Area-Terminal Protocol:** Supports communications between terminal servers and host computer systems over Ethernet.
- **DECtalk:** A family of products designed to convert ASCII text into verbal output.

Investors have also shown interest in the Mumps database, said Tom McIntyre, vice president of sales and marketing at McIntyre Consulting, Inc. in Concord, Mass.

IBM

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DCE "is moving way too slow" and requires too much custom development to have much use in PC LANs, but it has the potential to be "an incredibly attractive foundation" in glass houses that need to integrate existing mainframes with other systems, Lewis said. "That's where DCE is going to have its biggest impact."

Some audit functions, such as a record of failed log-in attempts, will be included in a DCE 1.1 release that the OSF is scheduled to ship in December [CW, March 7]. While that will be a welcome step, it falls far short of the full security capabilities that are needed in the MVS world, Guidry said.

The new MVS/DCE test code being shipped to early users such as Phillips Petroleum replaces the prototype Posix user interface that was in the first release with a full implementation. The code includes a hierarchical file system, and it also has had more complete testing within IBM than the first release, Beggs said.

MVS/DCE will be provided as part of MVS/ESA OpenEdition, a Posix-compliant version of the operating system.

More than 30 customers are taking part in the test phase, and the new batch of code should start being put on-line in the next month or so, Beggs said.

DEC, Oracle pair 7.1 and Unix clustering

By Mary Brandel

■ The dark clouds hovering over Maynard, Mass., lifted briefly at Database & Client/Server World in Boston recently, as Digital Equipment Corp. joined with Oracle Corp. to announce the December availability of Oracle 7.1 Parallel Server running on Alpha AXP Unix clusters.

The announcement was part of a joint program presented at the show that promises mainframe downsizers a one-stop shopping approach to purchase technology, consulting or support.

The pairing of Oracle 7.1 with a Unix cluster is not a first, "but it's a best," said Wayne Kernochan, an analyst at Forrester Research, Inc. in Cambridge, Mass. "They've got striking benchmarking numbers in terms of price/performance."

Digital has long been known for its superior clustering capability in the OpenVMS world, analysts said, and it is believed to be the best in Unix clustering as well.

Sky's the limit

Using 24 symmetrical multiprocessing Alpha AXP nodes in a cluster, Digital and Oracle forecast 15,000 to 25,000 transactions per second will be achievable.

Phenomenal speed

The substantial performance gains are due mainly to Digital's high-bandwidth Memory Channel interconnect, which allows communications of up to 266M byte/sec. between nodes.

"In current clusters, a CPU has to go through memory and out to the network to communicate," said Terry Shannon, an analyst at Illuminata in Hollis, N.H. "With Memory Channel technology, the connection occurs at memory level, so you don't have to go out to the network, resulting in phenomenal speed-ups."

For instance, Shannon said, "an Alpha cluster with four DEC 7000 five-processor systems gets you 3,700 [transactions per second]. Most of the Unix vendors are trying to push 1,000" transactions per second.

For now, however, the Memory Channel technology is restricted to high-end systems, which rules out the Peripheral Component interconnect-based DEC 2100, Shannon said.

In addition to performance, the clusters and parallel technology are intended to mimic the scalability, backup and reliability of the mainframe world.

At J. D. Simplot Co. in Boise, Idaho, "we've been worried about throughput and security for transaction processing" in Unix environments, said Raymond Sasso, chief information officer at the large food processor.

The company, which uses Sybase, Inc. databases, is planning to move to a client/server environment in the next three to five years.

However, some analysts said the pairing would add little to a mainframe downsizing solution.

"It will help in a narrow set of situations, such as indexing databases or full database scans," said Richard Finklestein, an analyst at Performance Technologies, Inc. in Chicago. "But most people . . . don't have the money or the need for parallel query."

Customers were also heartened by the apparent confidence Oracle is showing in the Alpha platform.

"It's a sign that I was looking for," said Joseph Polizzi, project engineer at the Space Telescope Science Institute in Baltimore. "If [Digital] can't [persuade] third parties to use [their technology] as a cornerstone to highlight their products, the company is in trouble."

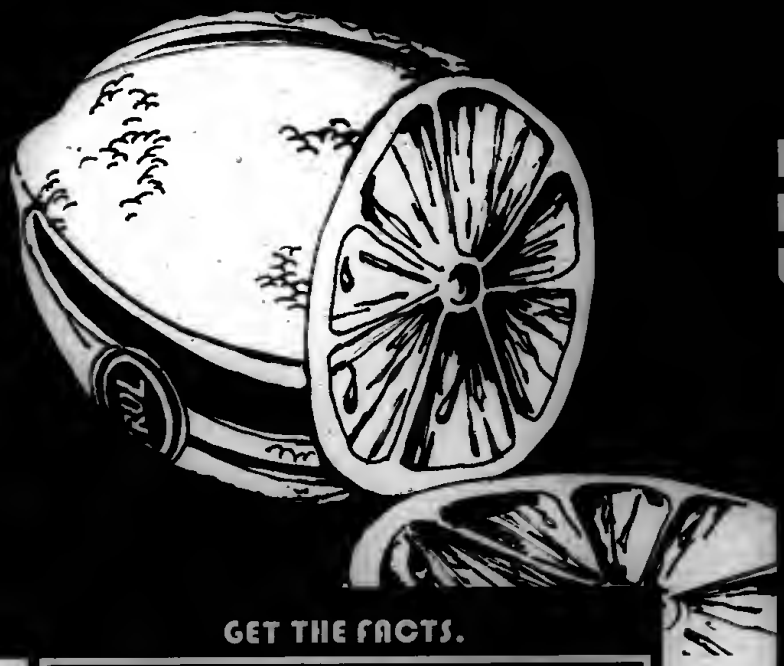
Nothing too special

However, "there's nothing overwhelmingly unique about the relationship," said Lynn Berg, an analyst at Gartner Group, Inc. in Stamford, Conn. "Oracle gets into everybody's unique hardware features."

The Enterprise Solutions Program includes the following:

- A single point of contact for products and services related to running decision-support types of applications in a downsized environment.
- December availability of Oracle's 7.1 Parallel Server optimized for Alpha Unix clusters. Beta tests are now being conducted.
- Jointly developed systems management tools that would allow single-console management of the operating system, network and database.
- A development center in Redwood Shores, Calif., staffed by 10 engineers — half from Digital, half from Oracle.

The companies said the program would be available to just a small set of customers in the second half of the year, with product and service delivery scheduled for next year. Pricing has not been set.



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HP claims users will realize rewards from replicated servers

By Mark Halper

■ Now that Hewlett-Packard Co. has lowered the entry point of its Unix servers to $6,000, the company is targeting a market served by PC LAN server vendors.

In an initiative it calls replicated application servers, HP claims large companies would gain faster response times and greater flexibility at multiple sites by implementing small Unix servers, such as the E-class series HP added to its minicomputer line in January [CW, Jan. 24]. Pricing for the E-class starts at $5,969.

Under HP's plans, users would load the same software programs on HP minicomputer servers at many sites and manage them from a central site using HP's OpenView systems and network management software.

Replicated explorers

Companies that have installed HP 9000 Unix systems running replicated software include Prudential Corp. PLC in London; Banco Bamerindus in Curitiba, Brazil; Fuji Bank Ltd. in Tokyo; Camelot Music, Inc. in Cleveland; Federal Express Corp. in Memphis; and Cole Taylor Bank in Chicago.

OpenView would spare users the expense of running LAN management software and operations at each site, HP said. It would also improve response time because users would have the power to run reports and other items on-site rather than request them from a remote server, said Patty O'Brien, HP marketing programs manager.

Typical users would be banks, insurance companies, brokerages, retail stores and hotel chains with many branches and stores, O'Brien noted.

Food for thought

Dave Brolsma, manager of information systems at wiring harness manufacturer EWD L.L.C. in El Paso, Texas, said the idea is appealing and added that he will consider it as his requirements for more computing power expand in about a year.

"To be able to control the systems from one place, from an overhead perspective, is a good idea," said Brolsma, who operates one large HP 9000, the Model T500.

Norton Greenfeld, an analyst at Computer Intelligence/InfoCorp in Westboro, Mass., agreed.

"You don't have to have an MIS staff in every supermarket you've got," he noted.

O'Brien pointed out that for flexibility, a retail store could double up the machine as a point-of-sale server and an inventory management server.

Greenfeld noted that having machines on-site is more reliable than accessing a remote computer because "at worse, you can have the machine go down and lose part of the store."

An IS director at a major Houston-based energy company said replicated hardware servers should provide an easier solution to problems now solved by replicated database software.

Software replication, compared with hardware replication, "is difficult to do, time-consuming and requires expertise," said the IS director, who asked not to be identified. "This has some romance for us."

HNC Software, Inc. has announced DataBase Mining Workstation (DMW) 1.5, a neural network-based product for statistical modeling.

According to the San Diego firm, DBW 1.5 enables the analysis of large and complex databases and provides predictions based on the statistical model.

Features include enhanced support for the model developer's decision-making process and the ability to deploy the model on any computer with a Cobol or C compiler.

Prices range from $25,000 to $50,000.

▶ *HNC Software*
(619) 546-8877

BGS Systems, Inc. has announced an upgrade to Best/1 for Open VMS, a performance and capacity management system for the Digital Equipment Corp. operating system.

According to the Waltham, Mass., company, the upgrade includes streamlined daily performance analyses, automated Windows operations and extended predictive capabilities to support Digital's StorageWorks products and striped shadow sets.

Other features of the upgrade include automatic generation of exception reports, utilization of hierarchical graphing techniques for bottleneck analysis, tracking of long-term performance in a historical database and prediction of change impact.

A scheduling utility lets users specify when an automatic Open VMS data analysis should take place.

Prices range from $25,000 to $50,000 for a typical configuration.

▶ *BGS Systems*
(617) 891-0000

Silvon Software, Inc. has announced SalesTracker 3.2, on-line sales analysis and management software for IBM's AS/400.

According to the Westmont, Ill., company, SalesTracker 3.2 is a reporting tool that captures, compares and analyzes sales, bookings, budgets, forecasts, freight, promotions and credit memos. It also provides data on the impact each area has on gross margins.

The product can handle data for up to 72 periods per year, so users can view data down to a weekly basis based on the requirements of their organization.

A prepack function lets users analyze sales and related data for prepackaged items.

SalesTracker 3.2 supports AS/400-to-PC connectivity for users who require data analysis capabilities from remote locations or spreadsheet functionality.

Prices range from $15,000 to $85,000.

▶ *Silvon Software*
(708) 655-3313

Computer Vectors, Inc. has announced Bear Bones, an external file transfer protocol.

According to the Kailua-Kona, Hawaii, firm, Bear Bones lets users transfer text or binary files between PC and mainframe systems using IBM's Indsfile.

The product supports network modem pooling using industry standard interfaces, includes defaults to simplify the file transfer procedure and provides options for customizing the system.

Bear Bones requires an asynchronous communications package that supports the use of external protocols or has the ability to shell DOS.

Bear Bones costs $45.

▶ *Computer Vectors*
(808) 329-5142

Software Engineering of America has announced Xreplus 2.4, Xrefplus DB 1.2 and Side by Side 1.2, products for MVS, MVS/XA and MVS/ESA environments.

According to the Franklin Square, N.Y., company, the products provide production support, direct-access storage device management and disaster-recovery planning.

Xreplus 2.4 is a job control language and procedure cross-reference utility; Xrefplus DB 1.2 is an option for creating and saving cross-reference databases.

Side by Side 1.2 allows users to perform line-by-line comparisons of different files.

Prices range from $1,500 to $12,000.

▶ *Software Engineering of America*
(516) 328-7000

MicroNet Technology, Inc. has announced RAIDbank Plus and RAIDbank with dual channel backplane, both of which are fault-tolerant disk array subsystems.

According to the Irvine, Calif., company, RAIDbank Plus features uninterrupted data transfer rates of up to 11.2M byte/sec. by incorporating a new hardware controller, 4M bytes of cache and an onboard Intel Corp. i960 32-bit RISC processor.

RAIDbank with dual channel backplane allows multiple host adapters and provides support for duplexing and mirroring.

All redundant arrays of inexpensive disks (RAID) drive modules feature the company's single connector attachment technology, which provides data, power and SCSI leads into one connector.

Prices range from $4,395 to $6,745.

▶ *MicroNet Technology*
(714) 453-6000

Syncsort, Inc. has announced PipeSort, software that performs multiple sorts simultaneously from a single read of the input data.

According to the Woodcliff Lake, N.J., company, PipeSort was designed for IBM MVS systems. The software reduces total elapsed sorting time by replacing serial sort execution with parallel sort execution.

PipeSort executes up to eight differently sequenced sorts, and it eliminates the I/O overhead involved in reading the same data for every sort.

Prices start at $12,700.

▶ *Syncsort*
(201) 930-8200

JBA International has announced enhancements to its Business 400 Financial Software for the AS/400.

According to the Rolling Meadows, Ill., company, the product includes enhanced support for international bank codes and the integration of PC spreadsheet budget modeling.

Users can create general ledger budgets and forecasts based on actual postings and existing budgets.

Prices start at $20,000, depending on the number of users.

▶ *JBA International*
(708) 590-0299

Cambex Corp. has announced the Array/6000 disk array subsystem with dual active controllers.

According to the Waltham, Mass., company, Array/6000 provides high availability storage for IBM RS/6000 computers operating in large relational database environments.

With dual active controllers, both controllers process I/O requests, nearly doubling throughput, while automatically reverting to single active mode if one controller fails.

Prices start at $65,000.

▶ *Cambex*
(617) 890-6000

Product short

Zebra Express, Inc. has introduced Zebra Express Accounting for Windows, midrange accounting software. Features include an inventory pricing matrix, inventory kits, tracking of noninventory items and a financial report writer. Cost: From $399 to $795. Zebra Express, Tampa, Fla. (813) 888-7500.

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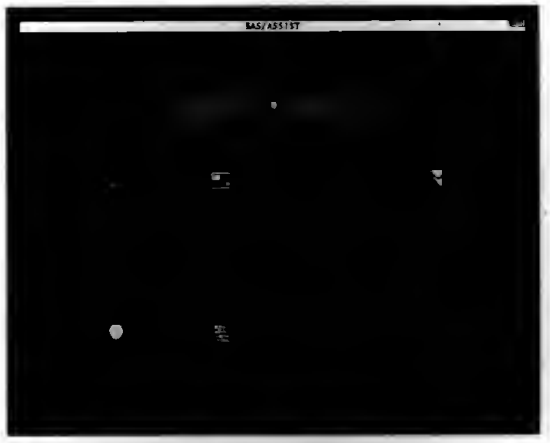

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Lotus to add building blocks to Notes

Third parties expand end-user application offerings

By Lynda Radosevich

In conjunction with Lotus Development Corp.'s recent announcement at PC Expo of new Notes application development tools, roughly a dozen companies unveiled applications built on top of Notes. The applications mainly tune Notes to fit specific vertical needs, such as improving sales and customer support.

"It's part of what I see as Lotus' strategy to add more breadth and depth in Notes," said Bob Flanagan, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H. The breadth comes from Lotus' promise to port Notes server and client software to multiple platforms; the depth comes from third-party applications that address specific needs, he added.

For users interested in Notes to streamline customer support and sales communications, The Cambridge Software Group in Cambridge, Mass., introduced two applications aimed at just those functions.

Its Customer Response Center is a set of connected Notes databases that track incidents, personnel, products and assets. The company said it can function on one workstation or scale up to run on many servers distributed around the world, if needed. The product costs $995 per server. The SalesAgent information system is a Notes application for tracking clients through a sales process. It works on Notes clients and costs $100 per client.

Workflow Technologies, Inc. in New York introduced business management applications for Notes. Eight separate database modules include new product development, scheduling, customer tracking and time management, which can all be linked. Pricing starts at $199 per user.

In the forecast

MFJ Internatinnal in New York said it has added graphing capabilities to its OverQuota sales force automation applications for Notes. The graphing capability lets users forecast revenue, sales trends and other material based on the data in a Notes database. The graphing module will ship for free to existing customers and will be built into future versions, the company said.

While Notes application developers are growing in num-

Notes, *page 76*

Development tools have pros and cons

By Lynda Radosevich

■ Lotus Development Corp.'s recently announced tools for building Notes applications answer several key needs but leave plenty of room for improvement, according to users, analysts and Lotus officials interviewed recently.

Specifically, Notes VIP, a visual programming tool for building Notes applications, is helpful because it lets developers create Notes applications without writing complex macros.

"I hate the Notes macro language, and the graphical VIP interface seems to help," said Mike Green, a database administrator at Brooklyn Union Co., a gas company in New York.

Also, developers can add charting and report generation capabilities without making the user drop into a separate application, said Jean-Pierre Ducondi, director of research and development at MFJ International, a systems integration company in New York.

Not all created equal

Lotus compares VIP to Microsoft Corp.'s Visual Basic programming tool because programmers can build applications by moving and linking objects on a screen. Still missing from VIP, however, are Visual Basic capabilities such as the ability to add drag-and-drop features to applications.

In addition, VIP lets users create only one report per Notes data object. For instance, a user could not run a report on monthly account executive sales and a report on monthly total account executive sales at the same time, Ducondi said.

In addition to Notes VIP, current Notes users can access a set of Open Database Connectivity drivers for Notes, called Notes SQL, for free via CompuServe. The drivers broaden the types of database products that query Notes databases using SQL calls.

But marrying Notes to SQL databases could open a can of worms. Some Notes customers, such as Millipore Corp. in Bedford, Mass., said Notes creates more than the average amount of "white space," or empty space between records, when data moves in and out.

Traffic jam

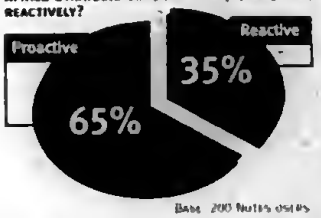
By making it easier to access the SQL database, it is likely that users will increase the traffic moving through Notes databases, thereby creating bloated applications that take longer to replicate and use more disk space than is necessary. Lotus officials acknowledged this but said most customers will not use Notes for the high-volume applications typically handled by transactional systems.

Separately, Lotus Chief Technology Officer John Landry said the company is looking into applications that connect Notes to the Internet.

A Lotus project, reportedly called InterNotes, aims to let companies use Notes as a server linked to World Wide Web servers that non-Notes users could access via Internet interfaces such as Mosaic. Landry did not mention pricing or availability.

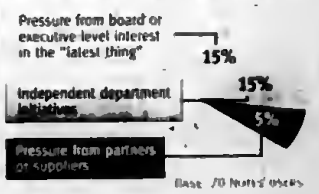
Push or pull

ARE YOU DEPLOYING NOTES PROACTIVELY – TO ATTACK STRATEGIC OR TACTICAL OBJECTIVES – OR REACTIVELY?



Base: 200 Notes users

WHAT ARE YOU REACTING TO? (OUT OF THE 35%)



Base: 70 Notes users

Source: Gartner Group, Inc., Stamford, Conn.

Client/server wanna-bes collect tips

By Kim S. Nash
BOSTON

More than 50 early arrivals at the recent Database & Client/Server World show here learned which products to choose and which to avoid when trying to meld existing technology into client/server systems.

The attendees also took home an opinionated earful from consultant Larry DeBoever, president of DeBoever Architectures, a consulting firm in Acton, Mass.

"About once a month, I get hired [specifically] to audit a client/server project that failed. Almost always, expectations were wrongly set," DeBoever said.

Right off the bat, client/server wanna-bes have to realize that downsizing is not re-engineering, he explained. In downsizing, the quest is to off-load as many applications as possible to delay the need for a hardware upgrade, particularly if the hardware is an expensive mainframe. The key is to cut costs, period.

Re-engineering, meanwhile, typically adds imaging and expert systems to the distributed technology mix, but the process also involves changing how tasks are completed. That means information systems costs often go up, not down, DeBoever said. But unlike pure

Client/server, *page 76*

Client/Server ideal

If you had a clean technology slate, consultant Larry DeBoever would advise zeroing in on one or two products in various categories. Here is a sampling of the good and not so good.

	Application development tools	Databases	Hardware	Applications	Operating systems
👍	Cognos' Powerplay, Powersoft's PowerBuilder	Oracle, Sybase	Sun SPARC 2000, HP 8go servers	SAP	Unix, Windows NT
👎	CASE, Microsoft's Visual Basic	Informix, Ingres	Mainframes (usually) and anything from Digital	D&B Software	Anything mainframe- or mini-computer-based

Melinda-Carol Ballou

Microsoft due for shift on CORBA

What's up with Microsoft and its stance on support for the Common Object Request Broker Architecture (CORBA)?

Rumblings from internal sources at Microsoft indicate that the company is reconsidering its obdurate stance and may embrace the object interoperability standard more fully than before.

Discussions among high-level executives, the systems management side of the company and a range of vendors could build on pending alliances — which the sources said go well beyond Microsoft's alliance with Digital — to yield interoperability between Microsoft's Object Linking and Embedding's (OLE) Component Object Model and the Object Management Group's CORBA. Although some Microsoft officials denied it, internal and industry sources said Microsoft will bless new technology to accomplish this that could ship by year's end. And not a moment too soon.

During the past few weeks, a number of corporate developers at major financial institutions, utilities and other sites have bemoaned Microsoft's lack of clear support for CORBA. These developers have been stymied by what they perceive as a lack of flexibility and vision on Microsoft's part.

Secure standards

While they are major Windows shops, these developers need standards that allow for the secure distribution of objects across a range of platforms from other vendors. And CORBA is supported by companies including IBM, HP, Sun and Novell.

While specifications that offer interoperability among CORBA implementations will not be available until the fall, current discussions are expected to provide developers and vendors with an effective means for such interoperability. Until the specification ships, there will be questions as to whether the upcoming CORBA 2 will be watered down by the conflicting, competitive interests of the vendors involved in setting the standard and thereby rendered ineffectual.

So far, however, the companies appear to be making the necessary compromises to come up with a CORBA 2 that will have teeth to offer real interoperability. The presence and ubiquity of Microsoft may, in fact, be helping to galvanize the group to make the necessary sacrifices to do so.

Some officials at Microsoft have said this interoperability standard would be a necessary prerequisite to their commitment to CORBA. CORBA 2, if it arrives on schedule, will provide that.

Because OLE is a de facto standard already out in the marketplace, interoperability between OLE and CORBA is critical. Other vendors and groups recognize this. Component Integration Laboratories, for instance, is offering its own CORBA-to-OLE interoperability for OpenDoc.

Microsoft officials have stated that they want to avoid discontinuity for their existing OLE base of developers and that supporting CORBA would create problems. (Early OLE developers were significantly disrupted before, due to extreme differences between OLE 1.0 and OLE 2.0.) It is critical that Microsoft offer a smooth transition.

Microsoft officials said they want to avoid discontinuity for their existing OLE base of developers and that supporting CORBA would create problems.

While some officials at Microsoft have emphasized the differences between object models that underlie OLE and CORBA, interoperability between the two does not require technical gymnastics, according to Microsoft sources and others working on the problem. Lack of support for CORBA has been more of a political issue than a technical one for Microsoft, according to corporate developers who are fed up and don't want to be locked into a Microsoft-only world.

Some developers see this as one more in a series of actions to keep them from creating applications for other technologies, such as OpenDoc. Key Microsoft shops want to be sure that Microsoft itself will stand behind CORBA before devoting resources.

Ultimately, their voices and their requirements may be responsible for a shift in thinking and a change in policy about CORBA at Microsoft.

Ballou is a senior writer at *Computerworld*.

Notes

CONTINUED FROM PAGE 75

her, most customers still use the template and development capabilities within Notes to create their own applications.

For instance, Forecross Corp., a San Francisco software and consulting company, uses Notes to track project documents and client requests.

The company provides its clients with a copy of Notes, some training and, in some cases, a notebook computer to use during the course of a systems migration project, which lasts from three to 12 months. The clients use Notes to send messages, upload software code and tap into the project management database, according to Pryce Harrison, vice president of sales at Forecross.

> The new applications mainly tune Notes to fit specific vertical needs

It took the company "a matter of days to do the whole thing," Harrison said, "and you can see the clients breathe a sigh of relief" because they know they have easy access to Forecross, Harrison add-

Cultural snags

When deploying groupware, building and installing applications is the easy part — getting people to use it is another matter.

"Some people are very keen; for others, it's a terrible thing, and they would rather walk down the hall and talk to somebody," said Lesley Shneier, an information officer and social scientist at The World Bank in Washington.

The World Bank wants to go workwide with groupware so teams that are already linked by electronic mail can share documents without faxing them. Besides finding the appropriate technologies, the bank must overcome cultural snags.

"Some people tend to be reluctant to use new technology, and for some it is a status symbol to have a secretary do the typing and sit outside their door," Shneier said, adding that with groupware, all staff member have to draft their own reports. — *Lynda Radosevich*

Client/server

CONTINUED FROM PAGE 75

downsizing, re-engineering — and the information systems that support it — may produce added revenue by opening up new avenues of income.

Words of wisdom

Other lessons DeBoever taught included the following:

- **Shoot the mainframe** but not the data center. Though client/server often conjures up images of smaller host machines sprinkled throughout a company, you should centralize as many of those servers as possible. That way, IS staffers can more easily control access to them and protect them from the elements. "You don't want people putting their coffee cups on your Unix box," he noted.
- **Cordon off business rules** that IS, end users and upper management have worked hard to quantify during business process re-engineering. You should protect the rules as much as the hardware. Write rules as stored procedures, housed in relational databases at the server level, instead of hard-coding them into individual applications. Stored procedures are basically "If . . . then" constructs that are triggered by database events.

For example, a manufacturer could have a rule that if the number of 12-in. bolts in stock drops below 100, the purchasing department will receive an electronic-mail message to order more bolts. Such a rule is best stored on a server, where it can be triggered by multiple applications instead of residing as a lengthy piece of code in several programs, DeBoever said.

Further, stored procedures can help enforce standard company practices.

- **Send a lightning bolt** through corporate developers by telling them to design and build applications without regard for what they think today's hardware can handle. Similarly, blueprint a client/server application as though wide-area networks were as fast as LANs.

In other words, do not be fenced in during the design phase by the limits of today's technology. By the time you are ready to deploy the program, the underlying hardware will have changed, so design for one or two steps down the road, DeBoever said.

"We think differently when we realize that MIPS are free," he said.

Brief

Caught up in the Web

KnowledgeWare, Inc. last week announced that it has joined the MecklerWeb initiative as a founding member. The MecklerWeb will let customers use the Internet to electronically conduct business and interact with developers, technology specialists and support staff, KnowledgeWare officials said. This is the first in a series of KnowledgeWare announcements regarding its electronic commerce program.

Forty-nine other vendors are participating as members of the MecklerWeb, officials said, including Digital Equipment Corp., Sun Microsystems, Inc., Dun & Bradstreet Software and Electronic Data Systems Corp.

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[redacted] more of an [redacted] a reality. [redacted] why the [redacted] UNIX leaders, Sun and Oracle, [redacted] 48% and 44% of [redacted] respective [redacted] markets. [redacted] formed [redacted] cooperating teams of [redacted] and [redacted] consultants to ensure [redacted] integrated, open [redacted] [redacted] panies also make [redacted] each other's emerging [redacted]

in running our businesses — a combined beta site of over 22,000 employees. No solution goes to market that we wouldn't rely on ourselves. For a copy of 'Oracle for Sun - An Enterprise Computing Platform' – an IDC white paper, call: **1-800-633-1071 Ext. 8160.**

ORACLE

Kofax Image Products, Inc. has announced Kipp Developer's Tool Kit 2.1, a set of high-level C libraries designed for prototyping and developing production-level imaging applications.

According to the Irvine, Calif., company, the product allows developers to add image scanning, compression, decompression, display, manipulation, file storage, image retrieval and printing to existing or new applications.

Kipp Developer's Tool Kit 2.1 supports a number of high-speed scanners and printers at rated speeds.

Kipp Developer's Tool Kit costs $1,495.

▶ *Kofax Image Products*
(714) 727-1733

StratosWare Corp. has announced MemCheck 3.0 for Windows, an automatic error-detection tool.

According to the Ann Arbor, Mich., company, MemCheck 3.0 for Windows integrates seamlessly with C or C++ code and works at runtime to identify errors by exact source file and line number in the source code.

Users can direct error messages to the screen, log files or electronic-mail addresses over the network.

MemCheck 3.0 for Windows tracks an application's objects, notifies developers of invalid operations and detects memory overwrites and underwrites.

MemCheck 3.0 for Windows costs $139.

▶ *StratosWare*
(313) 996-2944

Blackboard Technology Group, Inc. has announced GBB 3.0, a framework for creating high-performance applications.

According to the Amherst, Mass., company, GBB 3.0 lets users create object-oriented graphical user interfaces that are source code-compatible on all hardware platforms.

Other features include an event mechanism and enhanced retrieval, tracing and metering capabilities.

Prices start at $5,000.

▶ *Blackboard Technology Group*
(413) 256-8990

Rational Software Corp. has announced Rational Rose/Ada, a virtual software engineering tool for Ada development.

According to the Santa Clara, Calif., company, the product provides object-oriented analysis, design and implementation and lets users reverse-engineer Ada code into module diagrams.

Features include systematic and semantic checking, integration with external configuration management systems and querying, filtering and browsing mechanisms.

Rational Rose/Ada costs $5,295.

▶ *Rational Software*
(408) 496-3600

Alsys, Inc. has announced TeleUse Release 3, a graphical user interface development environment.

According to the San Diego company, TeleUse Release 3 supports C, C++ and user interface languages and large development efforts.

The product generates true object-oriented C++ code so users can create objects with attributes and methods that are easily adopted in current and future applications.

The product lets users drag graphical objects from a visual library and create higher-level objects that reflect business processes.

TeleUse is made up of three elements: VIP provides graphical user interface components; Dialog Manager manages dynamic components; and UI Builder administers the build process.

TeleUse Release 3 costs $7,500 for a single-user license.

▶ *Alsys*
(619) 457-2700

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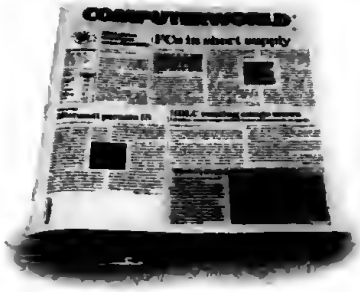

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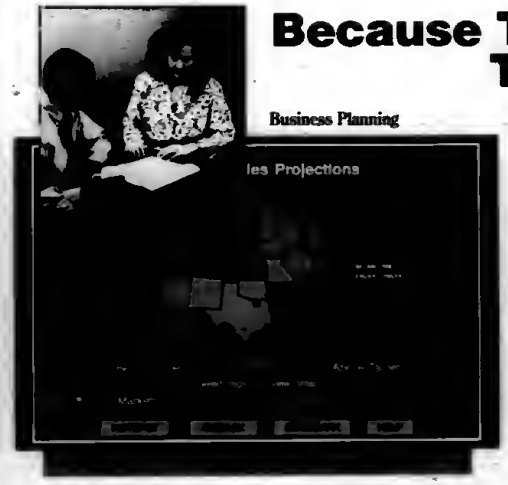
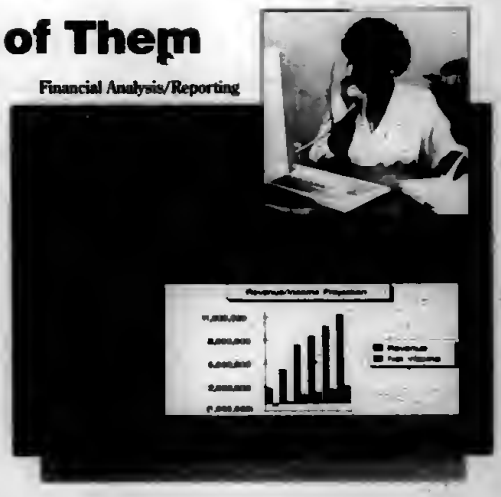


Business Planning



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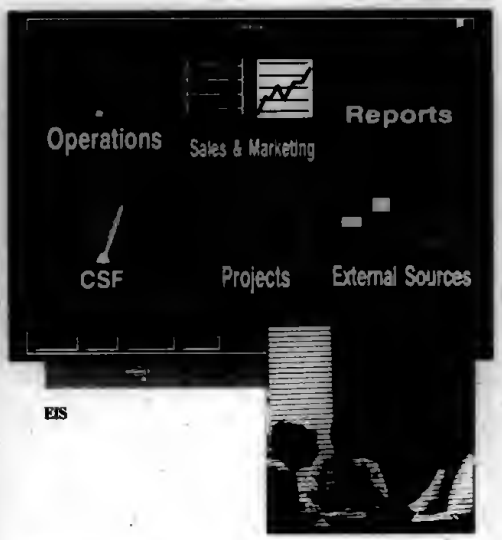

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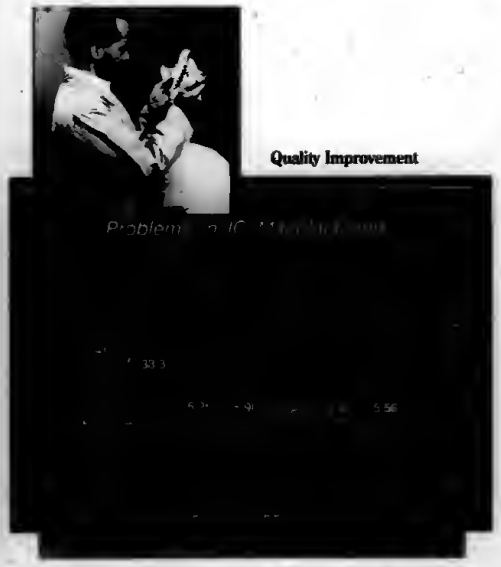

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[1]1993 J.D. Power and Associates Desktop Personal Computer Satisfaction Study conducted among 1,956 business user respondents. *Guarantees available in USA only for registered owners of Dell Performance Series systems purchased after 7/1/92. For a complete copy, please call our TechFax™ line at 1-800-950-1329 or write Dell USA L.P., 9505 Arboretum Blvd., Austin, TX 78759-7299. Arboretum Guarantees. [3]Prices valid in the U.S. only. Some products and promotions may not be available outside the U.S. Prices subject to change without notice. [9]Business leasing arranged by Leasing Group, Inc. [9]This 3-year Limited Warranty consists of Dell's standard return-to-factory warranty during the first year, plus 1 year of next-business-day on-site service provided by BancTec Service Corporation during the first year, plus a 2-year parts only contract for years 2 and 3. [Δ]On-site service provided by BancTec Service Corporation. On-site service may not be available in certain remote locations. The Intel Inside logo is a registered trademark and Pentium and Overdrive are trademarks of Intel Corporation. MS-DOS is a registered trademark and Windows is a trademark of Microsoft Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1994 Dell Computer Corporation. All rights reserved.

by joseph maglitta

Lean, mean flying machines

A new breed of low-cost carriers led by Southwest Airlines is redefining how airlines use technology

Look!

Up in the sky, it's a bird, it's a plane, it's (gasp) a profitable airline

The fast-growing new breed of no-frills domestic carriers, led by Southwest Airlines, isn't merely transforming the passenger airline industry. It's rerouting its technology future with no-frills information systems.

While American Airlines, US Air, Northwest Airlines and other full-service carriers struggle to shrink themselves and their mammoth legacy systems (see story page 82), niggardly upstarts such as ValuJet Airlines, Kiwi International Airlines and Reno Air are taking off with inexpensive new-wave technology and approaches.

Their minimalist formula uses PCs and client/server technology, outsourcing, off-the-shelf software, networks and the elimination of printed forms to keep costs low and service and profits high. Apparently, it's working.

During the past decade, low-cost, short-haul carriers have quadrupled their share of domestic passenger miles to around 13% of the market. In 1993, Southwest was the only profitable major U.S. airline. (It was Southwest's 24th consecutive money-making year.)

"The airline industry as we know it is gone," declares Woodrow Chamberlain, a vice president at CSC Consulting's transportation practice in Chicago. "Airlines like Southwest are beating the brains out of the top people."

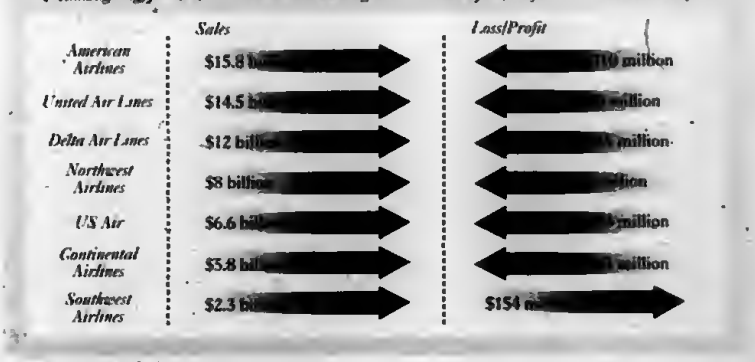
"The low-cost airlines have leaner, meaner, more simple technology strategies than the larger, more sophisticated airlines," says Michael D. Tebay, vice president at Mercer Management Consulting's transportation practice in Lexington, Mass.

So alluring is the bargain approach that National Airlines, the original low-cost carrier,

Lean, mean, *page 82*

Bigger, not better

Although big, full-service airlines had much higher revenue last year, only Southwest made money



Source: Moody's Investors Service

Lean, mean

CONTINUED FROM PAGE 81

was resurrected in May after a 15-year absence. Bankrupt Eastern Airlines and others may soon follow.

Big-name carriers may be pulling up from a horrific financial nosedive that saw them lose $11 billion from 1990 to 1993, according to federal government figures. American, United and Delta slowed their losses last year. But the majors — which run some of the world's most powerful (and expensive) information systems — still face unfriendly skies and are scrambling to downsize.

It's still too early to announce the final boarding call for the megamentality that created the Sabre reservation system and other legendary systems in the high-flying 1980s. The less-is-more approach to technology won't necessarily transfer to other airlines or industries. But there's little doubt that nimble newcomers are redefining what smart technology means for airlines in the 1990s.

Computerworld recently spoke with IS executives from several low-cost airlines, who explained how they translate simplicity, flexibility and economy into hardware and software.

Rethink distribution

Booking a flight is expensive. Up to 20% of the cost of a major carrier's airline ticket comes from expenses associated with reservations, according to Tebay.

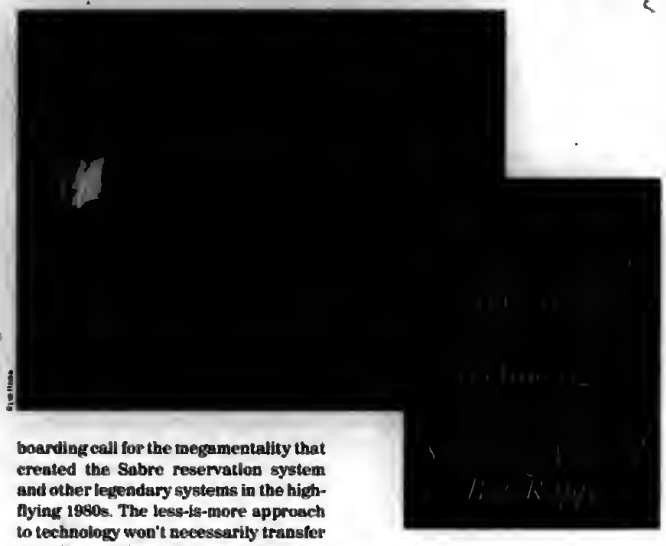
No wonder Robert W. Rapp, Southwest's vice president of systems, says, "Channels of [ticket] distribution are a fundamental issue for airlines." Technology "will play a significant role in changing that channel." It already has.

Twenty years ago, Southwest decided it would be cheaper to bypass the big computerized reservation systems used by all major airlines. Agents and others were encouraged to book directly with Southwest by phone, via CompoServe or other unconventional means. Estimated annual savings: up to $120 million.

Ironically, owners of computerized reservation systems eventually added information on Southwest flights and fares as a service to travel agents — and at no charge to Southwest. In May, Apollo and System One decided the free ride was too costly. They booted Southwest and 300 other nonpaying carriers off their systems.

Later that month, the airline began field tests of a new reservation system called SWAT, or Southwest Air Travel. The PC-based system lets agents dial toll-free directly into Southwest's reservation system to book flights and issue tickets. Southwest's 60-person IS group provides PC, modem, printer and software at no cost to users.

Initial reaction has been lukewarm. "It's kind of an antitechnology solution," notes Christopher Fotos, a director at Avmark, an Arlington, Va., aviation consulting firm. "If every little airline took that approach, a typical travel agent would have 20 or 40 terminals on his desk."



But Southwest is undeterred. Rapp says by year's end the airline plans to introduce "a more robust, convenient and sound product to the community" to replace the interim SWAT system.

Newcomer ValuJet is also keen on exploiting new booking channels. The 3-month-old carrier is negotiating with CompuServ to offer a simple reservation service that ValuJet's director of automation Ian Mearns says will be easier for individual fliers to use than American's EZ Sabre or Delta's Worldspan.

And later this summer, the Atlanta-based regional carrier plans to begin testing a new telephone reservation system that uses voice-response technology. Callers will be led through a series of menu prompts. Key booking information will be captured by voice-recognition technology linked to ValuJet computers, Mearns says.

Demand fast payback

"We have only one question," says Charles "Duffy" Mees, director of information services at Reno Air in Nevada. "How fast will [an IS project] generate revenue?"

An example: The company recently spent $400,000 on a new automated call distribution system. But Mees says there was an almost immediate payback of 150% due to the increased revenue the system helped generate. Next project: an executive information system based on a Novell, Inc. NetWare server and possibly Microsoft Corp.'s Windows NT to improve planning and financial control.

At Southwest, "we keep away from leap-of-faith projects," Rapp says. Proposed technology efforts are reviewed by an advisory committee that includes key IS people and users. (Separate groups look at application development and ongoing efforts.)

"We tend to avoid projects that create infrastructure without a specific business use. If we were to proceed with building a WAN, for example, a concrete project would have to bear that expense," Rapp explains.

The bottom line: Any IS effort that reduces staff or speeds up access to financial information will fly. Anything hinting of architecture for its own sake won't.

Get rid of paper

Consider the average airline ticket: tiny printing, done painstakingly on tiny, smeared forms that get passed from airline to travel agent to flier to attendant to keypunch to accounting and so on. No wonder airlines are dying to get rid of these expensive forms.

Morris Air, ValuJet, Kiwi International and others already run ticketless airlines. Southwest, Delta and others are seriously considering doing so.

Here's how it works: Fliers are given a reservation number the way they are at rental car agencies or hotels. Passengers simply show up at the airport, give the number, show identification if needed and away they go. A simple plastic boarding pass is sometimes issued at the door; passengers sit wherever they want, eliminating awkward seat searches. A receipt is mailed later.

Mearns ticks off the benefits. "We don't have to print and issue ticket stock with eight carbons and strict formatting in an odd size. We eliminate the high risk of loss for each first-class ticket. We eliminate the fraud department, reconcilia-

Lean, mean, *page 84*

Big carriers slimming down

Big airlines are working hard not to let low-cost carriers fly circles around them. Many are furiously slimming down and learning a few tricks from their nimble regional competitors.

UNITED AIR LINES is "looking very closely at what low-cost carriers are doing in terms of their operations," including IS, says Bob Restivo, director of computer operations and technology at UAL Corp., the Chicago-based parent of the nation's second largest carrier.

United is creating its own low-cost airline called "U2." (Continental Airlines and US Air recently began similar ventures.) It's also moving to smaller, cheaper platforms, Restivo says.

A new network of 32 IBM RS/6000s is being rolled out, part of a $3 million telecommunications management system. Company officials hope the new system will reduce flight delays and cancellations due to mechanical problems.

DELTA AIR LINES abandoned plans for "Delta Lite" and instead decided to transform itself into a low-cost carrier.

Ultimately, says Bob Woodyard, Delta's director of information technology planning, the company's Leadership 7.5 plan aims to lower its seat/mile cost from 9.3 to 7.5 cents – the same as Southwest's.

One key part is a massive re-engineering effort begun three years ago. Officials are banking the efforts will save $280 million in technical support costs. An outsourcing deal with EDS has long been rumored. Woodyard says, "A joint technology partnership with a major outside vendor" is close at hand.

In the meantime, Delta is busy shifting its passenger revenue accounting system to 400 Sun Microsystems, Inc. SPARCstations and SPARCservers. It's also re-engineering its entire corporate finance function with the help of McKinsey & Co. Woodyard says a major push to speed application development with client/server and open standards will continue.

US AIR GROUP recently scrapped the position of CIO and announced an overhaul of its 800-person IS staff as part of a plan to slash $1 billion in costs by 1996.

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Lean, mean

CONTINUED FROM PAGE 82

tion, keying ticket data in."

Another plus: ValuJet can get by with five accounting people, rather than 35 for similar-size airlines. So far, complaints have been few, Mearns says. "It's easier to deal with forgetting a number than with forgetting a ticket," he says.

The hunt for paper extends even to the cockpit. Several airlines, including Southwest and ValuJet, are putting laptops equipped with forms software in the hands of flight crews. Airlines say the approach permits electronic, in-flight recording of routine flight data and problems. It also eliminates expensive, time-consuming keypunching and paper filing of the data required by the Federal Aviation Administration.

Keep it simple

Along with economy, the highest virtue for the no-frills bunch is simplicity. Consider Southwest. It flies only Boeing 737s, offers no meals, assigns no seating and has no baggage transfer.

"At Southwest, you can just show up and march on the plane," Fotos notes.

"We're not that innovative when it comes to IS," Rapp admits. He says the airline purposely stays away from leading-edge technologies or any areas that require special skills and expertise.

For example, Southwest shuns TFP, a specialized operating system that most airlines use. It's too complex, Rapp says. The same goes for widespread open systems. Instead, Rapp is sticking with reliable, easy-to-run Amdahl Corp. mainframes, Hewlett-Packard Co. minicomputers and Novell LANs. That makes it easier to find technical people with expertise in these popular systems.

"We want to be innovative in the *application* of technology, not technology itself," Rapp explains. "We don't want people walking up to the counter and hearing someone groaning about the computer."

Simplicity even shapes software design. ValuJet purposely created simple, menu-driven screens atop its Unix-based reservation system. The result: Agents can be trained in less than a week — compared with the industry's average of a month.

Running a low-cost airline means keeping IS costs low — astonishingly low. Southwest Airlines, for example, will spend just $21 million on information technology and staffing in 1994. ValuJet, a nine-month-old short-haul start-up, will spend $1 million, which includes telecommunications. Reno Air's IS budget is just over $500,000, compared with American's $1.04 billion, United's $331 million and Delta's $250 million.

Source: Companies, *Computerworld Premier 100*

The low-margin world of low-cost carriers leaves little room for megamainframes and big torturously crafted programs.

"We will run as far as we can on Intel processors," Mees declares. "We don't want to make any large investments in large hardware."

Most low-cost carriers would agree. While Mees says Reno Air's client/server reservation system "breathes heavy" at peak times, he has made his strategic decision.

Reno Air has standardized on Compaq Computer Corp. hardware, including ProSignias and ProLinea 2000s. His tiny five-person IS department is developing an executive information system on a NetWare server.

Don't be afraid to hire outsiders

Whether the choice is motivated by a desire for innovation or budget constraints, many low-cost airlines aren't afraid to bring in IS leaders from outside the industry — or even the country. Bargain carriers know fresh faces can bring fresh minds.

Kiwi's IS manager Diane Whitford worked most recently in IS at retailer Gucci Co. Mearns, who hails from New Zealand, has a background that includes travel agency experience. Rapp spent 20 years in the oil and gas industry in smaller firms competing with giants.

"As a midsize company, microprocessor technology brought us things that only the Mobils and Arcos used to be able to do," Rapp says. "Technology had a way of leveling the playing field."

Let someone else do it

Low-cost airlines use several acronyms, but NIH (not invented here) is rarely one of them. Bargain carriers know when to roll up their sleeves and when to open up their wallets.

Reno Air contracts with Electronic Data Systems Corp. to provide access to System One. Southwest uses AMR Corp.'s Quick Res interface for its 4,000-agent reservation system, and it lets AMR handle tracking of frequent-flier miles. It also outsources processing related to aircraft maintenance.

ValuJet runs its entire operation on prepackaged airline software from CMS Solutions in Culver City, Calif. The Unix-based system, which runs on an NCR Corp. 3555, handles everything from reservations to accounting, maintenance, human resources, flight dispatch — even drug screening. Network software and installation is outsourced to Data Voice Networks in Philadelphia.

At Kiwi International, hired consultants *are* the IS department. (Currently, there's not even a data center.) Whitford says these hired hands are installing and expanding a new IBM AS/400-based system using prepackaged airline software.

Think people, not technology

"Our underlying philosophy is to pay attention to people and processes, not computers," Rapp explains.

That principle guides every Southwest action with customers and employees. For example, gate terminals are designed to let agents spend more time making eye contact with customers.

But the company is not afraid to deploy technology when it helps customers. Last winter, Southwest became the first domestic carrier to let airborne passengers send faxes and data to the ground. It uses AT&T Corp.'s long-distance lines and AirOne System from Claircomm Communications.

Inside the company, "the fastest and only way to do process redesign is to have everyone's support. It's almost a [joint application development] session," Rapp says. "We don't believe that people are commodities."

Ultimately, people, not technology, are Southwest's biggest weapon, Tebay says. "Southwest has enormously more cooperation from its labor than, say, a United has," he says. Coupled with alternative ticketing channels, highly motivated workers give Southwest a "critical strategic leverage" in technology deployment and in general, Tebay says.

Can major airlines downsize legacy systems fast enough to avoid getting crushed by their weight? Will smaller carriers upsize smartly and avoid having their systems crushed by business growth?

So far, Southwest has done a surprisingly good job scaling up technology as it grows, Fotos says. There's no reason it can't continue, he adds. Ditto for the other low-cost carriers. "Start-up airlines don't have to worry about being encrusted with years of great technology traditions," he notes.

How well old and new carriers learn from one another over the next few years will determine if the bags they need will be for airsickness or money. ■

Maglitta is *Computerworld*'s senior editor, corporate strategies.

Shifting winds

Low-cost airlines are radically changing the rules of how airlines of all sizes deploy technology

OLD WAY

Full-service carrier with assigned seats, baggage transfer, fancy meals, alcoholic beverages, movies, national or international service

- Big centralized reservation systems
- Efficient paper processing
- "Mega-systems," mainframe focus
- More IS is better
- Focus on reservation systems
- "We can do it best"
- Strategic advantage
- Technology first

NEW WAY

Low-cost carrier with open seating, no baggage transfer, no meals, no alcoholic beverages, no movies, regional service

- Agents and fliers deal directly with airline computers
- Minimize paper, ticketless approach
- Nimble systems, client/server focus
- Less IS is better
- Focus on operational systems
- "Let's outsource or buy it"
- Fast payoffs
- People first

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LEGACY SYSTEMS, LEGACY OPTIONS

Outsourcing and insourcing provide ways to keep critical legacy systems running while building new systems

By Lance B. Eliot

It's one of the great information systems juggling acts: maintaining legacy systems while developing new systems.

IS managers charged with making the transition from legacy systems with some or all of their applications will find a lot of questions with no easy answers.

Which legacy systems do you keep as legacy platforms, and which do you move to new platforms?

Can your staff keep old systems running while developing new systems? If not, on which end do you bring in help?

Which applications do you entrust to outsiders, and which do you keep under lock and key?

And where do you start when moving applications from the old system to the new?

Replacing the right systems

"The real trick in replacing legacy systems is first replacing legacy business processes," says Stuart Gaiber, IS director at the Avery Division of Avery Dennison, a $2.6 billion office supplies firm in Pasadena, Calif.

For Avery Dennison's management, the key to pulling off the trick was to systematically identify the business processes that needed replacing.

Consider Avery Dennison's specialty products plant in Rolling Meadows, Ill. The plant employs more than 200 people who produce customized indexes for loose-leaf binders. When plant general manager Jack Lee set new goals, such as halving the time necessary to fill customized label orders and increasing the plant's capacity to fill more orders, Gaiber and other plant managers began taking a look at which processes and systems needed to be replaced.

"We started by using a technique called Avery Value Analysis [AVA]," Gaiber says. A combination of written procedures and on-line forms and analysis (done with Microsoft Corp.'s Excel spreadsheets), AVA helps in gathering and thinking about business processes, costs of processes, opportunities for changing processes, brainstorming for new ideas and related techniques.

The AVA technique guides cross-functional teams in mapping out the existing legacy processes and systems, both automated and manual, and in deciding where changes should be made.

AVA identified several systems that needed revamping and indicated that the infrastructure should include PC-based systems.

"We realized that the goal of meeting the business needs of rapid access to information could be partially fulfilled by creating a desktop information delivery mechanism," Gaiber says.

But before moving any applications to PC-based systems, IS management must make sure classic transaction systems such as payroll and purchasing are running smoothly. Then they can pay attention to more strategic systems, such as new product development, collaborative computing systems and others that deliver valuable information to customers, according to Gaiber.

"You must get the existing transaction systems to do the right kind of work and to do so reliably to ensure that you are not in a continual fire fighting mode," Gaiber observes. "Then you can free up IS staff to do the newer systems work and overcome the original sin of information technology, namely the legacy system."

Stuart Gaiber, IS director of the Avery Division at Avery Dennison in Pasadena, Calif.

ALAN LEVENSON

"The real trick in replacing legacy systems is first replacing legacy business processes. And changing business processes takes time and must be accomplished within the values and business goals of the organization as a whole."

But what's the best tactic for stabilizing the older systems while developing new systems?

To outsource or not to outsource

Outsourcing is one solution. Firms can use outside vendors to maintain their legacy systems while their in-house staff makes inroads on newer systems. Or they can use the additional personnel from the outside to work on their new systems while their in-house staff keeps legacy systems running reliably. And short of outsourcing, they can bring in outside contractors to work with in-house staff on either or both ends of the transition process.

These contrasting strategies have been taken up at two of Pepsico, Inc.'s best known business units: Pepsi-Cola North America in Somers, N.Y., and KFC Corp. in Louisville, Ky., formerly known as Kentucky Fried Chicken.

Jerry Gregoire, vice president of technology at Pepsi-Cola North America, says the company is using outside contractors to help maintain existing systems and work on new systems development as the company moves toward replacing its legacy platforms.

Pepsi has been busy rolling out a highly distributed environment, including 270 LAN servers that connect 4,000 PCs, numerous database servers and application servers. The massive size of the project is straining IS staff, so the company has hired contractors to fill out the ranks, Gregoire says.

"We have a massive re-engineering effort going on. Our IS department has grown very rapidly, and if you can't hire as fast as you need to, you can hire contractors," Gregoire says.

Pepsi's solution was to bring in contractors to work among the various development teams and the legacy maintenance staff. But "contractors have been deployed mostly to keep the legacy systems running since they're dealing with the systems that will go away anyway," Gregoire says. In-house staff is focusing on new systems development "since they're the folks who will have to support it."

Taking the plunge

Ken Harris, vice president of worldwide information services at KFC, has taken the opposite approach. The company has worked with SHL Systemhouse, Inc., a systems integrator in Ottawa, to develop an innovative new point-of-sale (POS) system.

"We're a food company, not a technology company," Harris says. He turned to SHL to tap into the latest skills and capabilities in building modern systems, including Unix, C++, object-oriented development and code reuse. KFC personnel, both IS staffers and IS customers, worked side by side with SHL development specialists to design, construct and test the POS system.

In turning to outsiders to help deliver a strategic system, Harris has taken a step that many IS managers are reluctant to take. But Harris stresses that the risks can be mitigated by doing your homework up front. "We forged a true partnership, making sure that both parties to the venture had something at stake. We laid out the partnership stipulations in a contract that has numerous 'what ifs' to cover all the conditions that might occur," Harris says.

Legacy systems, *page 88*

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Legacy systems

CONTINUED FROM PAGE 86

Harris was able to free up funding for the POS application by outsourcing in another realm. "We outsourced our data center and turned fixed costs into variable costs. Now, besides the inherent savings from outsourcing the MIPS, we also have the capability of reducing mainframe expense when needed — and can use the subsequent available funds for other desired activities."

The inside trick

Rather than turn to an outsourcer, some firms choose to breathe new life into their in-house staff and pursue the option of "insourcing" to move away from legacy systems.

The insourcing option involves shaping in-house developers into a cohesive group. By applying the notion of being a business within a business, IS managers can reorganize the systems development staff to meet present and future development needs (including legacy systems maintenance, transference and systems development) while clarifying career tracks and providing proper tools and training.

Merrill Lynch & Co. has launched a sizable insourcing effort to consolidate its IS legacy systems support staff from a handful of semi-independent business units into a focused, service-providing core group.

According to Robert Dieckmann, first vice president, and Susan Luechinger, vice president, the goal is to concentrate Merrill Lynch's legacy systems maintenance specialists to ensure that both customer satisfaction and staff career needs are being fully met.

"We can provide the systems support staff with the kinds of re-engineering tools they need to handle maintaining and enhancing the legacy systems and make sure that no one languishes from neglect" from being isolated from their central IS peers, Luechinger says.

The insourcing effort at Merrill Lynch will allow economies of scale to leverage tools, training and other investments for the roughly 1,000 IS staffers that will become members of the new internal organization. The approach was successfully tried at Merrill Lynch when it insourced its document-printing activities into an internal service bureau called Tritech.

No magic wand

Moving away from legacy systems requires IS to stabilize on existing systems. This will allow it to refocus effort on its newer systems. At the same time, rushing toward newer systems may produce new problems if systems are not properly aligned with business processes.

Sharp IS managers are working to revamp business processes and IS at the same time and in conjunction with their systems customers.

Turning to outside labor to supplement IS staff must be done cautiously. Loss of control for critical applications, whether legacy systems or new systems, will make IS and its management vulnerable and can demoralize staffers. Insourcing or the selective use of outsourcing are means to successfully move off legacy systems. There is no magic wand, though some IS directors may feel as if they are called upon to have one. ■

Eliot is a free-lance writer in Huntington Beach, Calif.

FIRST THINGS FIRST

Six major steps are normally followed in the legacy system transference effort:

1 **Stabilize your legacy systems** – Focus on basic survival issues first. Without those key transaction systems running you might just stop the entire business.

2 **Identify business processes and their match to legacy systems** – Are your legacy systems behind your business needs or are they in sync with your business needs? There's no sense in converting a legacy system over to a new platform if it still does not meet those business requirements.

3 **Plan your short-term and long-term changes** – Action items should be created. Some changes can be done right away, while others will take time to implement. Prioritize and plan.

4 **Build infrastructure** – As you start to move away from legacy systems, you will need an infrastructure to support the transferred systems. Get started on the foundation as soon as you reasonably can.

5 **Implement short-term changes** – Tweak the legacy systems to immediately provide some relief. Get some new systems going, perhaps as pilot projects or prototypes. Make sure IS customers perceive that tangible results are coming soon.

6 **Implement long-term changes** – Having accomplished the previous steps, you should be on your way to making the long-term changes that are needed to overhaul or replace the legacy systems.

THE OUTSOURCING/INSOURCING OPTIONS

The options of what and when to outsource or insource when moving from legacy systems have their own strengths and weaknesses

Option:

Outsource legacy maintenance, keep new development

+ Investment in internal staff brings state-of-the-art technical know-how in-house and keeps staff motivated.
+ IS management can tap available supply of labor versed in older technologies (readily available, cheaper).
− Outsiders must be entrusted with operating key legacy systems that are needed to run business today.
− Internal staff may not be malleable enough to adjust to new technologies and techniques.

Option:

Outsource new development, keep legacy maintenance

+ Enables IS management to make quick progress on new development efforts by tapping into the latest techniques.
+ Staff members are deployed at what they know best (i.e., the legacy systems).
− The company may end up with new systems that cannot be supported by its own staff.
− Internal staff may feel neglected and become discontented or quit the organization.

Option:

Insource the development group

+ Insourcing promotes a business-within-a-business atmosphere to focus and professionalize the group.
+ Economies of scale are leveraged to provide development personnel with training and tools.
− Lack of familiarity with the approach may confuse IS and IS customers and distract from needs.
− IS may be pressured to offer new services that are not within its capability.

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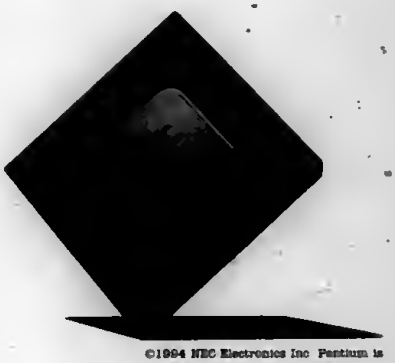

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Calendar

JULY 24-30

Systems Software Conference '94. Orlando, Fla., July 24-29 — Contact: Computer Associates International, Inc., Islandia, N.Y. (800) 925-2663.

Object World. San Francisco, July 25-29 — Contact: Lynn Fullerton, IDG World Expo, Framingham, Mass. (800) 225-4698.

New Directions in Cellular '94. Washington, July 26-27 — The conference will focus on the competitive outlook for cellular-based personal communications services (PCS); implementation challenges for time-division multiple access, code-division multiple access and global systems for mobile communications; wideband digital radio technology and economics; PCS spectrum allocation and the auction process; and Cellular Digital Packet Data user demand analysis, new antenna technology and fraud control. Contact: TeleStrategies, Inc., McLean, Va. (703) 734-7050.

Sixth Annual Computer Security Incident Handling Workshop. Boston, July 26-27 — The workshop targets computer security professionals who must deal with security incidents and system vulnerabilities. Contact: Lawrence Livermore National Laboratory, Livermore, Calif. (510) 422-6361.

Essential Skills and Knowledge for Effective Incoming Call Center Management. Seattle, July 26-28 — Contact: Incoming Calls Management Institute, Inc., Annapolis, Md. (410) 267-0700.

Windows World '94. Chicago, July 26-29 — Focus: Implications and impact of enterprise computing and the benefits of implementing a business-oriented information technology strategy. Contact: The Interface Group, Needham, Mass. (617) 449-6600.

Managing Enterprise Networks '94 — A Survivor's Guide to Network and Systems Management. Boston, July 27-29 — Keynote speaker: David Passmore, president of Decisis, Inc. Topics include "Strategic Decisions: Choosing a Management Platform" and "People and Money: Management Issues in Network Computing." Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880

The National Center for Database Marketing. Chicago, July 27-30 — Contact: Margaret Launzel-Pennes, National Center for Database Marketing, Stamford, Conn. (203)358-9900

JULY 31 - AUG. 6

12th National Conference on Artificial Intelligence/Sixth Innovative Applications of Artificial Intelligence Conference. Seattle, July 31-Aug. 4 — Contact: American Association for Artificial Intelligence, Menlo Park, Calif. (415) 328-3123.

Tools USA '94. Santa Barbara, Calif., Aug. 1-5 — Contact: Tools USA '94, Santa Barbara, Calif. (805) 685-1006.

IS Self-Assessment and One-on-One Benchmarking Seminar and IS Financial Benchmarking and Peer Analysis Conference. Washington, Aug. 2 (seminar) and Aug. 3-5 (conference) — The seminar is intended for those considering information systems benchmarking or interested in starting the benchmarking process with little out-of-pocket expense. The conference will present a variety of principles and practices used to conduct internal and external IS financial benchmarking and peer analysis. Contact: Terence Quinlan, Financial Management for Data Processing, San Francisco, Calif. (415) 731-3706.

ATM Market Development: New Applications and Opportunities. Washington, Aug. 2-3 — Focus is on the business case for ATM: ATM vertical markets; carrier- and user-migration strategies, and lessons learned and interoperability challenges. Contact: TeleStrategies, Inc., McLean, Va. (703) 734-7050

International Storage Systems Symposium. San Francisco, Aug. 2-5 — The conference is devoted exclusively to storage. Contact: Skill Dynamics, Dallas, Texas (214) 406-7200.

Macworld Expo. Boston, Aug. 2-5 — Contact: Macworld Expo international hot line, Hyde Park, Mass. (617) 361-5941

The Technical Side of Health Care Electronic Data Interchange (EDI). Chicago, Aug. 4-5 — This course is directed toward health care providers, payers, third-party administrators, claims processors, employees and financial institutions. Focus: EDI in health care at the technical level and the how-to information needed to fully implement EDI in the health care setting. Contact: Sterling Software, Inc.'s Commerce Institute, Dublin, Ohio (800) 456-3703.

AUG. 7-13

GroupWare '94. San Jose, Calif., Aug. 7-10 — Focus: Emerging technologies fellowship program offers fellowships to emerging groupware companies without the funds to display their groupware products publicly. The fellowship program also fosters publicity, partnerships and contacts for up-and-coming companies. Contact: Bob Bierman, The Conference Group, Scottsdale, Ariz. (602) 661-1260.

Share Summer 1994 Meeting. Boston, Aug. 7-12 — Keynote: Louis V. Gerstner, IBM chairman and CEO. Contact: Share, Inc., Chicago, Ill. (312) 822-0932

The Asynchronous Transfer Mode (ATM): Foundation for Broadband Networks. Denver, Aug. 8-9. Also being held in Troy, Mich., Oct. 10-11; Philadelphia, Oct. 24-25; and Atlanta, Oct. 26-27 — Contact: Lori Ann Milhaven, International Institute for Learning, Inc., New York, N.Y. (212) 758-0177.

World Developers Conference. Seattle, Aug. 8-10 — Focus: The conference will offer seminars and sessions in the following tracks: authoring techniques, multimedia applications, third-party solutions, computer-based training and database modeling. Keynotes are Paul Allen, chairman and chief executive officer of Asymetrix Corp.; Bert Kolde, president of Asymetrix; Jesse Berst, editor and publisher of "Windows Watcher"; and Rick Segal, director of multimedia development at Microsoft Corp. Contact: Waggener Edstrom-International Public Relations Counsel, Bellevue, Wash. (206) 637-9097.

Information Security Managers Symposium XIII. Hilton Head, N.C., Aug. 9-11 — The conference will address security issues such as multiplatform security administration, warning systems, securing the client/server environment and preparing for surviving a disaster. Contact: MIS Training Institute, Framingham, Mass. (508) 879-7999

Share Technology Exchange. Boston, Aug. 9-11 — Contact: Share, Inc., Chicago, Ill. (312) 822-0932

Workflow '94. San Jose, Calif., Aug. 10-12 — The conference will feature sessions for three levels of workflow technology experience: "Getting Started," "Implementing Now" and "Next Steps." Contact: Bob Bierman, The Conference Group, Scottsdale, Ariz. (602) 661-1260.

The Kerzner Approach to Project Management: A Systems Approach to Planning, Scheduling and Controlling. Troy, Mich., Aug. 12-15 — The event will examine how companies can get line managers and project managers to work together to bring projects in on time, within budget and free of conflicts. Contact: Lori Ann Milhaven, International Institute For Learning, Inc., New York, N.Y. (212) 758-0177

Re-engineering with Knowledge: Getting the Most Value From Your Most Valuable Asset. Chicago, Aug. 13 — Seminar will highlight the effective dissemination, consolidation and automation of knowledge. Contact: Carnegie Group, Pittsburgh, Pa. (800) 284-3424.

AUG. 14-20

Software Marketing Perspectives '94. San Francisco, Aug. 14-17 — Contact: Stuart Rauch, Kawalek & Associates, San Francisco, Calif. (415) 296-7744.

Washington Interactive Multimedia '94. Washington, Aug. 17-19 — Focus: Interactive systems for training, education and job performance improvement. Contact: Society For Applied Learning Technology, Warrenton, Va. (703) 347-0055.

The On-line Networking Exposition and Bulletin Board Service Convention. Atlanta, Aug. 17-21 — Contact: One, Inc., Aurora, Colo. (303) 693-5253.

AUG. 28 - SEPT. 3

Client/Server '94 East. Washington, Aug. 29 to Sept. 1 — The conference will focus on users ranging from business executives to technical managers and value-added resellers and integrators. Contact: CMP Publications, Inc., Jericho, N.Y. (516) 733-6700.

Effective Methods of Systems Testing. Orlando, Fla., Sept. 1-2 — Part 2: Process for Test Execution. Contact: Quality Assurance Institute, 7575 Dr. Phillips Blvd., Orlando, Fla. (407) 363-1111.

SEPT. 11-17

1994 International Client Forum. Orlando, Fla., Sept. 11-14 — Contact: Susan Spatafora, international client forum manager, System Software Associates, Inc., Chicago, Ill. (312) 641-2900.

Forum94. Denver, Sept. 11-14 — Contact: Laurie Haberthier, Storage Technology Corp., Denver, Colo. (303) 673-5524.

The Annual Energy and Technical Services Conference. Seattle, Sept. 11-14 — Keynote: The evolution of the store engineer role by David Freedman, senior vice president of corporate facilities and president of Giant Construction Co., a division of Giant Food, Inc. Contact: Food Marketing Institute, Washington, D.C. (202) 452-8444.

First Annual Conference on Cable TV. Washington, Sept. 12-13 — Focus: Industry trends, opportunities and strategies for equipment vendors, regulatory and financial opportunities and technological issues. Contact: Wanda Napolitano, Frost & Sullivan, New York, N.Y. (212) 964-7000.

Smart Color '94. Stanford, Calif., Sept. 12-13 — Topics include overview of color engineering and standards; device-independent color in operating systems; analysis and design of Smart Color scanners, monitors and printers; analysis of color management systems, and ColorSync 2.0 workshop. Contact: Stanford University, Stanford, Calif. (415) 715-6275.

Commercial Parallel Processing Conference. Chicago, Sept. 12-14 — Contact: CMP Trade Show & Conference Services, Jericho, N.Y. (516) 733-6827.

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SALT is a nonprofit corporation devoted to improving education, training and job performance through technology-based learning systems. For information or to register, contact SALT, 50 Culpepper St., Warrenton, Va. 22186; or call (800) 457-6812 or (703) 347-0055.

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VI

It was Friday. Everyone was looking forward to the weekend. Our 3,500-workstation network was humming along. But then it started. An odd-acting workstation. A program file that was larger than normal. Before we knew it, the unthinkable had happened. We had a fight on our hands.

BY PHILLIP ZAKAS

We've spent hundreds of man-years and millions of dollars researching, testing and installing our software, gateways and network. As a result, we can exchange information with the most remote sites in the world as easily as with the building next door.

In the basement of our building, scores of message and file servers are running 24 hours a day supporting thousands of users; despite this elaborate scheme, the network has never experienced an unscheduled outage lasting more than a few minutes.

This high-speed and efficient operation is due wholly to good planning and a complicated array of redundancies. No single failure could cause more than a few users to be down at any time. Yet in the course of a Friday last fall, we were forced to shut our network down entirely.

Zakas is a technical coordinator at a large organization in Washington. He can be reached through his CompuServe account, 75141,1416.

FRIDAY 9:30 A.M.

It began with a phone call from a technician. A computer he was preparing for travel use was not running properly; after he installed a software package onto its hard disk, the computer refused to reboot.

We couldn't find any cross-linked files. There were no other problems with the computer's hard drive File Allocation Table. So we ran a virus scan of the hard disk's files to see if any had been infected.

Running this scan caused the computer to hang, so we rebooted using a fresh DOS disk instead of the hard drive and tried again. This time, we were able to complete a virus scan of the hard disk. We didn't find any viruses.

One thing was odd, however. The file size of the COMMAND.COM program was larger than normal: 49,586 bytes instead of 48,113. I copied the file to a diskette and took it to my computer for analysis.

10:00 A.M.

I ran a debugging program I wrote that allows for on-the-fly disassembly of programs and shows the assembly language version of the code. At the beginning of the program file, I saw something very suspicious. Instead of normal program commands executing in sequential order, there was a JMP instruction that pointed to code at the end of the file. This code contained sequences that waited in memory for executable programs — typically .COM, .EXE and .OVR programs — and attached itself to the end of all the files the computer was executing.

This was clearly virus code.

In disassembling the code further, I saw that it was a simple, memory-resident program whose sole purpose was to spread itself. It would infect program and overlay files while avoiding the disk boot sector.

But instead of infecting only programs executed in a normal DOS fashion, the virus would attack any file that was copied or spawned using a special BIOS sequence. Therefore, it didn't just target .EXE and .COM files but anything that appeared to be "executed," including Microsoft Corp. Windows font and video files.

The infection manifested itself as corrupted screens and garbled text in Windows. If we hadn't known we had a virus on our hands, we might have assumed the problem stemmed from program bugs.

10:45 A.M.

Within a few minutes of completing this analysis, I received news that two users' machines in different parts of the building were having the same problems as the infected computer.

Assuming the worst-case scenario, I checked off in my mind what I knew:

- A virus had infected a small number of workstations in different parts of the organization.
- The virus was undetectable using our normal virus scan program and caused our antivirus software to hang computers.
- The virus infected program files indiscriminately.

Another call confirmed another in-

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RUS!

fection. I added the following to my checklist:

- The virus was spreading rapidly.

11:45 A.M.

We checked our antivirus software vendor's bulletin board system and found that the company had just released a new version of its software. We used it to scan the first infected workstation and found a name for our virus: Athens.

However, the new software also hung when running on an infected workstation. We decided to hold an emergency meeting at 1:30 p.m. to discuss the findings and plan an attack.

1:00 P.M.

Just before the meeting, I went to check out one of the newly infected workstations. Apparently, it had managed to infect a program executable residing on one of our Novell, Inc. Netware 3.11 servers. This infection happened despite the fact that the workstation's user had only Read and File Scan rights to the file's directory and that the file was flagged Shared and Read Only.

In addition, although we were using a network-based antivirus package to prevent all unauthorized writes to the file server, it failed to prevent the infection. Further, the program file on the server was 1,473 bytes larger in size than it should have been. A quick look using my debugging tool confirmed our suspicions: It was definitely infected. My checklist was growing:

- The virus was on the network and refused to obey a law we thought was as good as the law of gravity: You cannot change a file on a NetWare server that you don't have adequate rights to. This virus could fly.

1:30 P.M.

At the virus strategy meeting I thought about how file servers operate down to the hard disk mechanism and zeroed in on a memory pool known as "dirty cache."

When a program is executed on a NetWare server, the system must first load it into dirty cache; otherwise, processing the hundreds of transaction requests made by the file server would take forever.

Files remain there for 3.3 seconds, after which the cache is flushed — unless more calls are made to the same files. If more calls are made, the file is then moved to normal cache.

In testing, we found that a file could remain in dirty cache for up to 30 minutes before it would be flushed. Thus, any workstations calling the same executable would run an infected program sitting safely in the server's cache and infect themselves.

In this manner, the virus could ping-pong from workstation to file server to workstation until it infected every workstation. Because this cache area was not protected by our server-based antivirus program, the virus was sure to spread throughout the network in a few hours.

2:00 P.M.

We decided to shut down the entire network. We E-mailed all users asking them to log out of the network within 15 minutes.

Unfortunately, we recalled too late that logging out of the network would infect LOGOUT.EXE on the servers, thus helping to spread the virus to even more workstations.

While the network was down, we went to a software store and bought a workable network-based antivirus product that would protect the server cache. Then, we planned a cleanup effort and called for volunteers.

ILLUSTRATIONS BY BOB COMBE

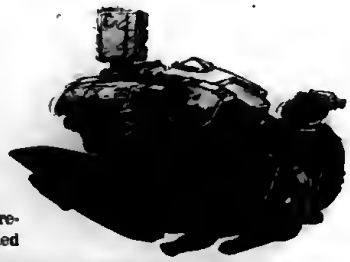
Virus, *page 94*

Virus

CONTINUED FROM PAGE 93

4:00 P.M.

The volunteers split up into two groups: a network group focused on cleaning up the 45 file servers (because some infected files could have resided in areas that were not marked



Read and File Scan only) and a workstation group focused on finding the quickest and most effective method of cleaning up more than 3,500 workstations.

The network group used a server-based antivirus product that could detect and clean up the virus and protect the server's cache. Because the virus was causing irreparable damage to files, we had to replace infected files. Server cleanup thus occurred nonstop, one server at a time, for the next 14 hours.

For workstation detection and cleanup, I created a diskette that, when cold-booted, would scan all files on a hard disk. If it found an infected file, the program would delete it, turn the screen red, display a warning message to the user and send a "whoop-whoop" sound through the PC speaker until someone turned the machine off.

The whooping PC speaker would ensure that a technician walking near an office with an infected PC would hear the sound and clean up that workstation.

If the workstation hard disk was clean, a green screen would appear along with a message that the computer had been scanned and no viruses had been found.

For cleanup, I created two programs. One would allow someone to restore any damaged DOS system files without having to reinstall DOS on the workstation. The other would allow a technician to log into the network using clean network drivers, attach to a server-based repository of known applications and begin a manual replacement of deleted files.

After replacing deleted files, the technician would reinsert the detection disk, cold boot the machine and leave the green screen on the monitor for the user.

SATURDAY 1:45 A.M.

We were all hungry. Two of us went to find a restaurant that offered carry-out. Given the fact that we were chasing the Athens virus, it was ironic that the only place still serving was a Greek restaurant.

6:15 A.M.

The team finished cleaning all the servers and was ready to go on-line with the new antivirus software installed. We brought the servers up. I finished testing and refining the workstation detection and cleanup disks.

SATURDAY 8:00 A.M. TO SUNDAY 9:00 P.M.

About 25 volunteers, ranging from IS staff to end users, used the workstation disks to detect and eliminate the virus from more than 250 workstations. We also detected and cleaned up 13 workstations infected with other viruses.

EPILOGUE

By early Monday morning, the entire organization was up and running as if nothing had happened. Some of us were a bit worse for wear, however, having caught only about eight hours of sleep in the previous 72 hours.

Dozens of users, impressed with reassuring green screens on their monitors and the massive cleanup effort, sent their congratulations.

One volunteer left a voice-mail message for another that was short and to the point: "Here's something you should never forget." The "whoop-whoop" sound of the PC speaker could be heard in the background. ■

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Allen Barnard
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In the information market, this much is clear: Vendors make the products. IS managers make the decisions.

The EDS corporation, working for the World Cup soccer organization, had an enormous task ahead of them. They needed to quickly design an information system to supply coverage and scores to the fans of what is arguably the world's most popular sport. In addition, their broadcast communications center would be home for 3,500 visiting broadcasters for almost two months. And although the time was tight, there was the additional pressure of knowing soccer fans do not take errors lightly.

In overtime, the save came from Cisco Systems. Cisco routers, combined with the expertise of EDS, provided the perfect way to deal with the mind boggling array of information needs presented by World Cup soccer. The Cisco routers offer impressive flexibility, so any number of protocols and interfaces can be used. In particular, Cisco's switched link activation handles overflow traffic when dedicated circuits overload—crucial for when the action heats up. After all, soccer journalists aren't known to suffer fools gladly, either.

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Overhaul *success*

By Avery L. Jenkins

"I have talked to a lot of people who have been mainframe programmers for 20 years, and that job has gone away," says Kent Kleiva, product manager of enterprise systems at the National Education Training Group in Naperville, Ill. Kleiva, like many information systems managers, is seeing a rapid change in needed skills.

As the popularity of distributed computing grows, IS managers are faced not only with updating their legacy applications but also with updating the skills of their staffs. As Cobol and VSAM give way to Smalltalk, C++, Microsoft Corp.'s Object Linking and Embedding and the Open Software Foundation's Distributed Computing Environment, the range and depth of technical skills required have become much greater than they were even a few years ago.

One, two, three

To bring his staff up to client/server speed, Bill Melvin employed a three-pronged approach: He identified several starter projects to wet their feet, hired consultants to work on-site for 6 to 12 months to oversee the projects and rotated programmers and analysts through each project to learn the new technology.

Thus, for many organizations, the factor limiting their advance into new technologies is the ability to recruit, retrain and retain people who can build with those tools and maintain the systems they construct.

Coping with change

The approaches that companies have taken to meet the requirements of PC-based computing range from the low-cost and informal to extensive IS staff re-engineering.

At KFC in Louisville, Ky., "we are still in the process of changing," says Bill Melvin, senior international development manager. "We see this as a long-term commitment."

As is the case at other companies, Melvin says his primary method of developing the necessary talent has been to retrain staffers. "We are in a highly competitive business, and we can't afford to overstaff," he says.

If KFC were to add people, it would have to ask whether the new technology were even worth deploying, Melvin adds. "It is less expensive to invest in our current people than to bring in a new crew." To get his staff up to speed, Melvin employed a three-pronged strategy that involved rotating his programmers and analysts through starter projects, allowing them to learn the new technology.

Melvin also provided on-site training classes for the small project groups as they were working. "We immersed them in it for the duration of the project," Melvin says. "We didn't want to train 200 programmers at once, 10 of which were going to use it and the rest of which would forget it because they wouldn't be using it for another year." The consultants, who constitute the most expensive part

Meeting resistance

There are always people who, for a variety of reasons, resist change. Reasons range from the "not invented here" syndrome to a lack of desire. Fortunately for these companies, it has not been a common problem. Allan Bush, training coordinator at Grolier Co. in Danbury, Conn., says that if anything, the people who were not picked for a hot project were upset. The feeling is, "if they don't get it, they won't have a job in five years," Bush says. Resistance is from the hardware end, Bush adds, because "they won't have anything to support in a few years."

Bill Melvin, senior international development manager at KFC in Louisville, Ky., says it's too early to tell whether any of his staff will be unable to make the transition. "There are some people who are more resistant to change than others," he says.

Melvin adds that his company hasn't identified many people who "we're going to throw the towel in on," only those who need a little extra help to jump the hurdle. Those who can't make the transition will support the remaining legacy applications, he says.

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of the transition, provide two functions, Melvin says. As well as providing "a knowledge transfer" to his permanent staff, they shepherd the important initial projects to successful outcomes.

While KFC's transition represents a large-scale, coordinated migration, other companies with less funding have adopted a more informal approach with similar success.

For example, the Chesterfield County, Va., IS technology department is supporting client/server with little formal training.

Even though deployment of client/server applications began last year with a new human resources package, "basically we are still in a training mode," says Susan Mintz, principal programmer/analyst. "We haven't hired anyone here, but we are training everyone."

The training regimen, however, has been simple and straightforward because, like many governmental organizations, "our training budget has been slim," Mintz says. Training is not separately allocated, and each expense must be individually approved. "We are learning by doing," she says.

Mintz started by having a few key people read books and manuals. "We are a hard-core lot. We don't mind sitting down and digging through the books," she says. Also, IS staffers have gone to trade shows and vendor conferences, and "we've had one or two vendor training classes."

While this approach has proved satisfactory, Mintz says, there are drawbacks. "When you get into client/server, the amount of information and training is overwhelming," she says. Because only a few people have been assigned to training and must continue their current jobs at the same time, the re-education process has slowed deployment, she adds.

Skills to fill

A recent study conducted by Mississippi State University examined job advertisements for IS across the country. The results: Companies are rewarding best for traditional skills.

Percent of job advertisements	Skill
10[illegible]%	PC/LAN
2[illegible]%	Relational database
2[illegible]%	Unix
2[illegible]%	C
1[illegible]%	Cobol

Base: 1,300 newspaper advertisements
Source: Association for Systems Management, Cleveland

Al Grolier Co. in Danbury, Conn., training coordinator Allan Bush says that to help old-style mainframe programmers move into the PC world, he has been "holding their hand."

Grolier has taken a more extensive approach, providing its IS staffers with in-house and external training. "You need to tap all of the resources you can get," Bush says. "We give them all of the tools to make it as easy as possible."

The next hurdle

Grolier has been thorough, but the process hasn't been easy. The IS department needed an additional training budget, and at the same time the workload of those staffers had to be reduced. Overall, Bush says, it takes about six months "before they become proficient."

Giving programmers and analysts the technical knowledge they need is only part of the solution, experts say. It also requires a new mindset.

"Not only does it mean a different set of technical skills, but a different set of people skills," says Lois Slavin, founder and president of Changing Communications, a consulting firm in Brookline, Mass., that specializes in transformational communications. "The problem is, how do you train people who are doing today's jobs for the jobs of the future?"

The new IS staffer "must go out to the masses and play a more consultative role," Slavin says. These soft skills are acquired differently than the technical skills. "Employers must realize that it's not an overnight learning experience," she says. "People skills are learned over a long-term basis with day-to-day practice."

The best way to develop these abilities, Slavin says, is to "send them to training with their business partner or design special training in consulting skills or business for the IS people."

To determine whether the IS staff needs an overhaul, "look very carefully at your IS organization and evaluate their customer focus," Slavin says. "If it has proven itself in satisfaction and quality, it's worth retraining. If there are serious problems in those areas, then I would take a good look at hiring from the outside." ■

Jenkins is a free-lance writer in Ansonia, Conn.

Say it ain't so

According to a survey of Fortune 1,000 sites, IS directors have their work cut out for them. Training concerns are at an all-time high as companies move to client/server.

Percent of respondents	Are development plans flunked by staff's skills?
70%	Yes
16%	Not yet, but they will be
14%	No

	How will they cope?
57%	of developers will need new skills
29%	will be able to develop new systems without retraining
14%	won't make the transition to new technologies at all

Base: 61 Fortune 1,000 companies
Source: Forrester Research, Inc., Cambridge, Mass.

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Experience managing multiple information technology functions such as systems analysis, integrating mainframe, microcomputer and LAN applications; data processing center operations; systems programming; telecommunications and data communications services; developing and maintaining systems architecture; developing organization-wide information technology policies; and data/database administration. Experience managing large information technology projects, both internal and contractor staffed.

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Preferred Qualifications: Completion of a Bachelor's Degree (Master's Degree preferred) in Information Technology, Computer Science, Telecommunication Engineering or a closely related field and ten years of increasingly responsible managerial experience in applying information technology to meet the needs of government of business organization (County/city experience preferred).

Extensive managerial experience with systems architecture planning and development; information systems analysis design, construction, integration, operation, security and maintenance - including methodologies and tools; computer hardware and software including mainframe, minicomputer and small system platforms; networks (LAN/WAN) and telecommunication theories and equipment; system integration and interfacing; data and database administration; technology protocols, standards and associated processes, contract and project management; and quality standards and processes.

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DISASTER RECOVERY CONSULTANT: Provides consulting in the field of contingency management and disaster recovery planning. Acts as major contributor to proposal teams and proposal reviews. Supports customer activities in preparation for an actual disaster or recovery drill. Performs risk analysis, business impact analysis and audit compliance. Presents proven recovery methodologies and Business Recovery Center service deliverables on request in the form of presentations, training and focus groups. Back up for customer support representative function including scheduling customer drills, evaluating available resources, coordinating pre-drill meetings and conducting post-drill evaluations for technicians participating in recovery drills. Also back up for Technical Services Manager in areas of DASD management, systems software, communications software, communications hardware, disaster recovery consulting and customer support representatives. Responsible for management post-drill reporting and evaluations of recovery drill results. Experience: 8 years in data processing/communications and must include at least four years in data recovery applications, including all phases of contingency management; developing risk management and business impact analysis procedures; planning recovery of operating and business applications systems; developing site specific disaster recovery plans utilizing a recovery planning software tool; experience with security systems that move pre-tested application programs into a secure production environment; and tape management functions encompassing tape filing, retrieval, identification for recovery and off site storage procedures. The minimum working hours are 40 hours per week, with a salary of $4,580 per month. This ad is employer paid. Please send resume in confidence to: Michigan Employment Security Commission, 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Reference No. 52294.

SOFTWARE ENGINEER: 40 hrs/wk. 8 a.m. - 5 p.m., $42,700/yr. Design & develop computer s/w application systems on IBM 3090 m/f utilizing MVS, CICS, DB2, NATURAL, ADABAS, & COBOL. Analyze user requirements & assist in system implementation. Prepare external & internal designs, test plans, & test data. Requires Bachelor's Degree in Computer Science. Reqr. 3 yrs. expr. in job offered, or 3 yrs. expr. as Systems Analyst/Programmer. Reqr. work expr. in design & development of comptr. s/w systems on IBM 3090 utilizing MVS, CICS, DB2, NATURAL, ADABAS, & COBOL. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 63894.

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Effective communication skills and mobility are essential. Forward resumes to:

Systems Technology Group Inc
2573 Rochester Rd.
Suite 110
Rochester, MI 48307
FAX (810) 853-0008

SOFTWARE ENGINEER: 40 hrs/wk. 8 a.m. - 5 p.m., $46,600/yr. Analyze, design, & develop computer s/w systems for manufacturing & industrial applications on IBM 3090 m/f utilizing MVS, CICS, DB2, VM, CSP, & IMS DB/DC. Gather user requirements and carry out internal & external system design. Prepare comprehensive test plans & assist with user documentation. Requires Bachelor's Degree in Computer Science, Electrical/Mechanical/Industrial Engineering, Operations Research. Reqr. 3 yrs. expr. in job offered, or 3 yrs. expr. as Systems Analyst/Programmer. Reqr. work expr. in design & development of comptr. s/w application systems on IBM 3090 utilizing MVS, CICS, DB2, VM, CSP & IMS DB/DC. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 60394.

Applications Programmer (Houston, TX area client site) Develop, code, test, maintain and document financial and commercial applications systems, using CSP, COBOL and DB2 on IBM mainframes. Bachelor's degree in Math, Comp. Sci., Engineering, or Business Admin. and 1 yr. exp. in job req., or will accept 3 yrs. of exp. in lieu of Bachelor's degree and 1 yr. exp. 40 hrs/wk, 8:30-5, $33,500/yr. Apply at the Texas Employment Commission, Houston, TX, or send resume to the Texas Employment Commission, TEC Building, Austin, TX 78778, J.O.#TX7211705. Ad Paid by an Equal Opportunity Employer.

PROGRAMMER/ANALYST: 40 hrs./wk. 8am-5pm, $36,500/yr. Write program specifications based on internal design document, develop programs, write test cases and carry out unit and system testing on IBM mainframes and UNIX platforms utilizing MVS, CICS, DB2, COBOL & ORACLE. Assist in implementation of application s/w and user training. Reqr. Bachelor's degree in Comptr. Scnce, Electronics, Communications Engrng, 1 yr. exper. in job offered, or 1 yr. exper. as Asst. System Analyst/Systems Analyst/Prgrmr. Work experience in development and testing of application s/w on IBM m/frm and UNIX platforms utilizing MVS, CICS, DB2, COBOL and ORACLE. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 60794.

Applications Programmer (Houston, TX area client site) Develop, code, test, maintain and document financial and commercial applications systems, using CSP, COBOL and DB2 on IBM mainframes. Bachelor's degree in Math, Comp. Sci., Engineering, or Business Admin. and 1 yr. exp. in job req., or will accept 3 yrs. of exp. in lieu of Bachelor's degree and 1 yr. exp. 40 hrs/wk, 8:30-5, $33,500/yr. Apply at the Texas Employment Commission, Houston, TX, or send resume to the Texas Employment Commission, TEC Building, Austin, TX 78778, J.O.#TX7211704. Ad Paid by an Equal Opportunity Employer.

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SENIOR SOFTWARE ENGINEER

Northern Chicago Suburb

Hollister Incorporated, a leading manufacturer of high quality health care products located in a northern suburb of Chicago, is presently in need of a Senior Software Engineer. In this position, you will be responsible for assisting in the design of sophisticated electronic instrumentation and control systems used in the health care industry.

We require 5-7 years of experience as a software engineer using C/Assembler for embedded microcontroller and C/C++ for Microsoft Windows. You should also be familiar with structured software methodology and the use of PC-based design tools. Knowledge of 68HC11/68HC16 microcontrollers and 80x86 microprocessors, along with medical product design experience would be a plus. BSEE or BSCS degree or equivalent is required.

We offer a very competitive salary, an outstanding profit sharing plan, performance bonus, and other top benefits. For consideration, please forward resume to: Debbie Tokarz, Hollister Incorporated, Dept. CW, 2000 Hollister Drive, Libertyville, IL 60048. Equal Opportunity Employer M/F/D/V.

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SENIOR PRODUCT SOFTWARE ENGINEER

Alnet Communication Services Inc., the nation's fourth largest long distance service provider, is currently seeking a Senior Product Software Engineer at their Southfield location.

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Qualifications include a Bachelor's degree in Computer Science and at least five years programming experience in a multi-user Tandem environment. Specific knowledge must include Tandem and PC software applications such as SQL, "C" programming and data communications including X.25 and/or TCP/IP. Excellent analytical, communication and leadership skills essential.

Alnet offers competitive compensation, comprehensive benefits and a challenging, fast paced environment. To apply, please send your resume to: Alnet Communication Services Inc., Dept. JM/Eng, 30300 Telegraph, Ste. 147, Bingham Farms, MI 48025-4610. Equal Opportunity Employer. Principals only please.

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This is a technical programming position on [illegible] using object oriented design/C++ programming language and Sybase as a database [illegible] also provide technical expertise in SQL and Sybase as well as work closely with business analysts and the user community. Reply to Box UNIX.

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This position is involved in full life cycle development in an object oriented environment, using C++ in the PC/Windows platform.
Requirements include strong C and C++ skills, and at least 3 years experience in structured development applications. Background in Windows development and OOA methodology preferred. Reply to Box Windows.

In return for your expertise, we'll offer you a competitive salary and excellent benefits. For consideration, please send a resume and salary history, indicating appropriate Box Code on the envelope, to:

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CCC Information Services Inc., Attn: Technical Recruiter, 444 Merchandise Mart Plaza, Chicago, IL 60654-1005.

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Individual will act as a consultant for applications development. Position requires: 3 years experience supporting an IDMS Database Management System and 2 years logical and physical data design along with 5 years total data processing experience in positions of increasing responsibility. Prior experience working in a large IBM mainframe environment operating under OS/MVS utilizing IDMS/ADSO is also required. Experience with Data Base 2 software is a plus.

This position offers challenge, recognition and career growth along with a competitive salary and a comprehensive benefits program.

Please send or fax a detailed resume along with your salary requirements to: Maureen Teague, Employee Relations Supervisor, FISHER SCIENTIFIC, 711 Forbes Avenue, Pittsburgh, PA 15219. Fax: 412-562-1725. Equal Opportunity Employer.

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Software Developer: 40 hrs./wk., 8 am - 5pm; $38,000/yr., overtime as needed, not compensation. Job requires a Master's degree in Computer Engineering or Systems Engineering or Industrial Engineering and 2 yrs. exp. in Job Offered or as Computer Applications Engineer and/or University Research Assistant. Job also reqs. 1) Exp. must include exp. developing graphical user interface 2) Exp. must include exp. designing object-oriented databases; 3) Exp. must include exp. using C, C++, and SQL computer languages; 4) Exp. must include exp. using a network database; & 5) 1 graduate course in each of the following: a) object-oriented databases; b) data structures; & c) computer networks. Special reqs. 1), 2), 3), & 4) may be met concurrently during the same 2-yr. period. Job duties: Analysis, design, code & document a variety of new features for a corporate software product which accesses a network database. Troubleshoot software problems & modify software based on customers' recommendations. Qualified applicants should send resume & verification of reqs. to: 7310 Woodward, Rm. 415, Detroit, MI 48202. Ref. #88694. Employer Paid Ad.

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PROGRAMMER ANALYST (Ref. 37494) to consult with clients to ascertain & define their business requirements to problem areas utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; enhance & customize manufacturing, financial & distribution management software package, including design & development of new modules, redesign & maintenance of existing modules, database modifications & system testing using 4GL PRO-IV, SUPERLAYER & C on IBM, VAX, RS-6000 platforms, using UNIX, VMS, MS-DOS, LAN & ORACLE systems; porting software to various platforms including UNIX, VMS, integration of various modules, integration testing & customization; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, System Executive or Member Technical Support. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, developing software in PRO-IV, porting of software across various platforms, using UNIX, VAX, C, VMS, MS-DOS, $44,000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

SENIOR DATABASE DESIGNER/SYSTEM ANALYST (Ref. 48094) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions software for clients' EDP systems; project scheduling, management, design, program testing, install, document & maintain large SYBASE installation running on SUN SPARC SS-10 servers on ethernet & TCP/IP on SUN OS 4.1 to Solaris 2.1 or DEC ULTRIX 4.2 with APT 5.0, Data Workbench, Report Workbench & ISQL front-end GUI-based tools; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Management-Information Systems or Deputy Manager-Systems. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, designing, developing & testing large databases using SYBASE, TCP/IP & DEC ULTRIX 4.2; $40000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

PROGRAMMER ANALYST (Ref. 49894) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; analysis, design, co-ordination, development, system testing, implementation & post implementation support of Demographic System, process & data flow design & development of the system, client interaction for requirements study, module & system testing, document & product support, develop application on IBM 3090, PS/2 using MVS/ESA, CICS, SDF, COBOL, C, DB2, Embedded SQL, PROEDIT, QMF, TSO, INTERTEST, OMEGAMON, OS/2, OS/2 Dialog Manager, OS/2 Communication Manager, PC, FLOW, AMIPRO & WORDPERFECT, Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant or Systems Administrator. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, system development on IBM 3090 & PS/2 using MVS/ESA, CICS, SDF, COBOL, C, DB2, SPUFI, QMF, INTERTEST, OS/2, OS/2 Dialog Manager & OS/2 Communication Manager; $43000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

PROGRAMMER ANALYST (Ref. 46994) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; analyze, design & develop an Integrated Welfare System, understand functionalities, do process flow, dataflow design, relational data modeling, database design, module actions, structure charts, ER diagrams using SSAD techniques & providing technical support & interfacing with other subsystems, design, develop & implement on-line, batch applications for MMIS interface subsystem using Knowledgeware ADW, TELON, DB2, IMS/DC, REXX, JCL, TSO/ISPF, ADMVS, XDB, IBM 3090 under MVS/ESA & PC-486 under OS/2 environment; Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Analyst Programmer, Lead Analyst, Module Leader or Project Leader. Will accept 3 yrs college ed plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, analysis, design, development & maintenance of systems on IBM 3090 using DB2, COBOL, JCL & XDB; $42000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

PROGRAMMER ANALYST (Ref. 47694) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; quality assurance, regression test & evaluate complex business application software on VAX/IBM/HP/NOVELL platforms in the manufacturing, distribution & finance areas, create & execute test plans & provide technical leadership to other programmers; Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Manager-Systems, Senior Systems Executive or Project Manager. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, developing implementing Administrator computer software; $43000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

PROGRAMMER ANALYST (Ref. 48894) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; analyze, design, co-ordinate, develop & system test a Demographic System, process & data flow design & develop system, interact with clients for requirements study & module & system testing & documentation on IBM using MVS/ESA, DB2, CICS, COBOL, Embedded SQL, TSO, REXX & CLISTS, PC, FLOW, AMIPRO & WORDPERFECT; Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered to 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Analyst, Programmer Designer, Database Designer or Module Leader. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, system development on IBM 3090 using MVS/ESA, COBOL, DB2, CICS, TSO/ISPF & REXX, $43000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

PROGRAMMER ANALYST (Ref. 48594) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; analyze, design & develop Comprehensive North American Customs System; data flow & data modeling, implement system on IBM 3090 under MVS/ESA using IMS DB/DC & DB2; Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Electronic Engineering, Systems Analysis or an equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Senior Software Engineer to Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, design & development of software using MVS/ESA, IMS DB/DC & DB2; $43000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

PROGRAMMER ANALYST (Ref. 49794) to consult with clients to ascertain & define their business requirements to problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; analyze, design & develop an Integrated Welfare System, gather & validate user requirements, process flow & data flow design, assist Database Administrator in data modeling, overall design & development of the conversion part of the system, understand the existing Welfare System of the state, identify the method to automatically transfer the system to the new system; analysis & design workstations of an Application Development Workbench a Workgroup; using IBM 3090, MVS/ESA, TSO/ISPF, DB2, IMS-DB/DC, CICS/VS, VS COBOL II, REXX, CLIST, JCL, TELON, MICROFOCUS COBOL, ADMVS & IBM-PS/2; Reqs. Bach. in Comp. Sci., Comp. Engineering, Electrical Engineering, Electronic Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Analyst/Programmer or Database Designer. Will accept 3 yrs. college ed. plus 2 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, developing application on IBM 3090 & PS/2 workstations using TSO/ISPF, DB2, IMS-DB/DC, CICS/VS, VS COBOL II & REXX; $41000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

Software Engineer, Detroit: Design and develop software algorithms & implement in various languages to integrate system and application software. Develop GUI to provide front end support using UNIX/C. Develop UNIX device drivers/PC. Develop communication programs in UNIX/C environment using TCP/IP and Sockets. Develop UNIX Shell scripts for System Test Suites. Administer UNIX and PCs networks both as LAN & WAN. Design & develop firmware tools for Embedded systems applications and firmware code in Assembly language. Reqd. M.S. in any field plus one year exp in job offered or as R&D Eng. Exp. in UNIX/C, TCP/IP, GUI, LAN/WAN networks and UNIX Device Drivers/PC. $41,000/yr; 9-5. Employer Paid Ad. Send resumes to 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref. No. 60094.

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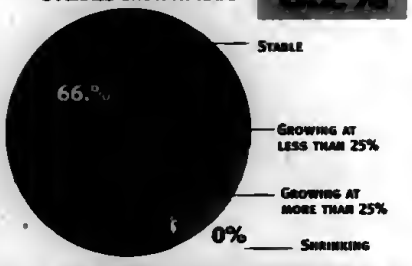

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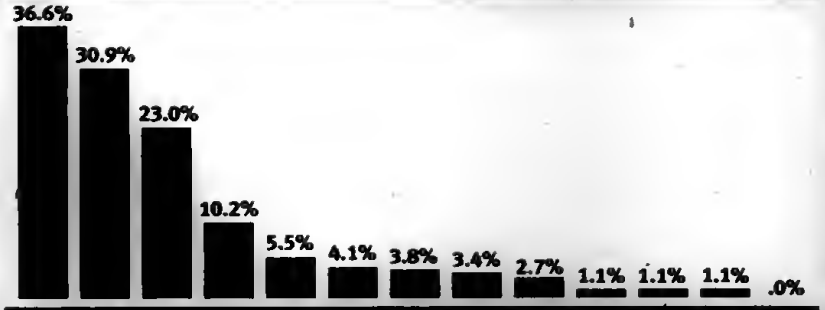

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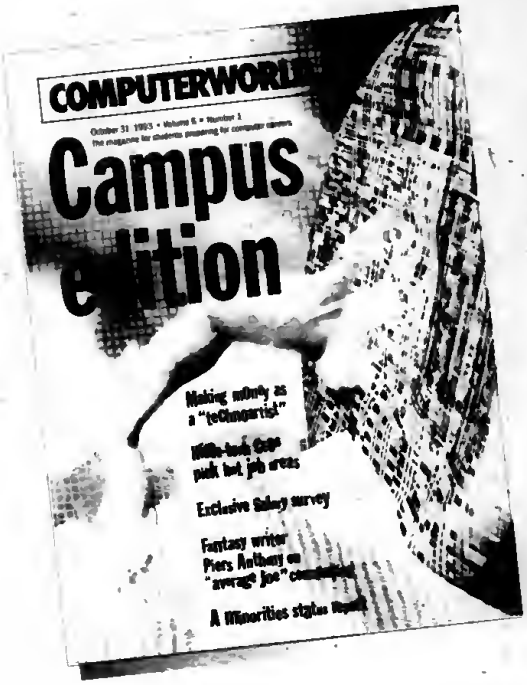

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FOREGO FIXED-TERM LEASES

By JOHN JUZBASICH

Experts estimate that more than 70% of computer equipment leases are either terminated early or extended. Figure into that trends such as downsizing and outsourcing and the common fixed-term lease becomes undesirable.

Rather than getting stuck in an expensive leasing situation simply because computing requirements can't be predicted, try negotiating for flexibility.

Tools such as early termination tables and lease-extension rates force leasing companies to adhere to original projected yields. An early termination provision and table enables you to return equipment without a large prepayment penalty. Similarly, if you decide to extend a lease on equipment that maintains a high fair-market value, such as laser printers, a prenegotiated lease extension rate is in order.

Some of the larger leasing firms provide these provisions as standard offerings, but with the help of a spreadsheet, you can create your own and attach them to your next contract. ■

Juzbasich is president of Merit Systems, a consulting firm in Paoli, Pa., that specializes in financial contract negotiations.

Early termination table

An early termination table is a set buyout amount for the months prior to the end of a lease. Use the following example and formula to develop your own.

EXAMPLE: You want a 48-month lease term with early termination options from months 36 to 47. All payments will be made monthly, in advance. You provided the equipment value and the borrowing rate in the request for quotation. The leasing firm provided the monthly rentals in their response (shown at right).

Equipment value:	$1.5M
Lessee's borrowing rate:	8%
36-month lease payment:	$43,825
48-month lease payment:	$34,605
60-month lease payment:	$29,358

Using the above example, a spreadsheet will help you calculate the following:

1 Calculate the present value of the 36-month lease stream at the lessee's borrowing rate.

INPUT:

Number of payments	36
Payment	$43,825
Interest	8%
then	
Present value is	$1,407,858

The lessor expects to receive $1,407,858 plus the residual value of the equipment at the end of the three-year lease.

2 Since you chose the 48-month term, at the end of month 36, you will have made 36 payments of $34,605. Calculate the present value of the payments made.

INPUT:

Number of payments	36
Payment	$34,605
Interest	8%
then	
Present value is	$1,111,670

The lessor has not received the expected yield for a 36-month term, so an early termination payment is necessary.

3 It's important that the lessor be restored to its original financial expectations, therefore calculate the future value.

INPUT:

Number of payments	36
Payment	$34,605
Interest	8%
Present value is	$1,407,858
then	
Future value is	$376,229

This future payment restores the lessor to its original expectations.

4 Construct the early termination table by reducing the future value payment, $376,229, by $31,352 ($376,229 ÷ 12) each month.

LEASE TERMINATION	TERMINATION PAYMENT
36 months	$376,229
37 months	$344,877
47 months	$31,357

Although not shown here, each month should be represented.

5 Include in the lease contract the table (shown at left) and a provision that states: "The Lessee has the option to terminate the lease at any time after month 36 without further obligation based on the Lease Termination Table in Exhibit A."

6 What's been accomplished? In most leases, if you had concluded the lease at the end of the 38th month, a payment of $346,050 (10 times $34,605) would have been due. If the lease provided for a present value of the remaining payments at 5%, the amount due would be $339,659, a rather small savings of $6,391. However, when using the early termination table, you pay $313,525, yielding a significant savings of $32,525 — over five times the savings of the present value termination method!

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Gainers / Losers

Percent

Gainers		Losers	
Gateway 2000 Inc.	25.9	KnowledgeWare Inc. (L)	-40.9
Compression Labs Inc.	23.5	Telebit Corp	-22.7
Magic Software Enterprises	22.2	TriCord Systems (L)	-20.6
Network Equipment Tech.	17.6	Wellfleet Communications	-19.3
Symantec Corp	16.7	Interleaf Inc. (L)	-18.6
State of the Art	16.7	Parallan Computer	-17.1
Printronix Inc.	16.2	Group 1 Software	-16.7
Intergraph Corp	14.1	Legent Corp.	-16.7

Dollar

Gainers		Losers	
Texas Instruments	3.63	Wellfleet Communications	-4.88
Micron Technology	3.00	Legent Corp	-4.25
Powersoft	3.00	Sybase Inc.	-3.00
LSI Logic Corp	2.88	KnowledgeWare Inc. (L)	-2.25
Gateway 2000 Inc.	2.75	PeopleSoft	2.00
Atmel Corp	2.38	Group 1 Software	-1.61
Compression Labs Inc.	2.38	ITT Corp	-1.63
Dell Computer Corp	2.19	Progress Software Corp.	-1.63

[redacted]

A road map for success?

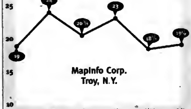
Growth in the desktop mapping market is likely to make **MapInfo Corp.** (MAPS) an attractive investment, according to one Wall Street analyst.

MapInfo is a Troy, N.Y., supplier of geographic data visualization and analysis software for desktop users. Richard Edwards, an analyst at Robertson, Stevens & Co., rated the stock a Buy based on the early introduction of MapInfo Release 3, the company's solid execution of its business plan and its market expansion strategy. Desktop mapping revenue increased 24% in 1992 and 37% last year to $115 million, according to Daratech, Inc., a Cambridge, Mass., market research firm, and is expected to continue growing.

Edwards said he considers MapInfo's foray into Europe — a relatively untapped market for the desktop mapping industry — an avenue for success down the road. To this end, MapInfo has strengthened its management team in Europe and leveraged its distribution with local application partners. "MapInfo should outdistance the competition because in Europe it is a question of building the infrastructure," Edwards said.

Increased competition from privately held competitors **Environmental Systems Research Institute** (ESRI) and **Strategic Mapping, Inc.** (SMI) is an expected risk to investment, however. Both ESRI and SMI plan to ship Windows-based products that compete with MapInfo this year, but MapInfo has a three-year head start in this area. "MapInfo's growth will come as its installed base goes from a small number of users to a large number and as more value-added resellers roll out applications with MapInfo software," Edwards noted. — *Tim Ouellette*

STOCK PERFORMANCE



Exch	52 Week Range		Company	July 8 3pm	Wk Net Change	Wk Pct Change
Communications and Network Services						OFF [illegible]
OTC	63.75	19.61	3Com Corp.	49.13	-0.44	-0.9
NYS	45.56	36.25	Ameritech Corp.	38.88	0.13	0.3
NYS	65.00	49.50	AT&T	53.63	-0.63	-1.2
OTC	26.50	12.75	Banyan Systems Inc. (L)	13.75	-0.25	-1.8
NYS	69.13	49.00	Bell Atlantic Corp.	55.00	-0.75	-1.3
NYS	63.88	53.00	BellSouth Corp	60.63	-0.88	-1.4
NYS	21.50	7.63	Bolt, Beranek & Newman	10.63	0.63	6.3
OTC	35.75	8.00	Brooktrout Technology	11.00	0.00	0.0
NYS	132.50	82.63	Cabletron Systems	98.63	3.25	3.4
OTC	43.00	17.50	Centigram Communications	18.13	-0.63	-3.3
OTC	60.25	31.50	Chipcom Corp	37.63	-0.88	-2.3
OTC	40.75	20.13	Cisco Systems Inc	21.38	0.05	-0.2
OTC	18.38	9.25	Compression Labs Inc.	12.50	2.38	23.5
OTC	12.50	6.50	Computer Network Tech.	6.50	-0.50	-7.1
OTC	33.75	8.50	CrossComm	9.25	0.25	2.8
OTC	3.38	1.50	Data Switch Corp	2.44	0.00	0.0
OTC	36.50	17.88	DSC Communications	20.13	0.88	4.5
NYS	17.63	8.25	General DataComm Inds.	15.88	0.25	1.6
NYS	39.88	29.50	GTE Corp	30.25	-0.50	-1.6
NYS	95.97	77.01	ITT Corp	80.25	-1.63	-2.0
OTC	29.88	21.38	MCI Communications Corp.	22.75	0.50	2.2
OTC	7.75	1.50	Microcom Inc.	6.13	-0.75	-10.9
OTC	23.50	13.50	NetManage Inc.	15.00	1.00	7.1
OTC	7.25	3.50	Retix Corp	5.13	0.13	2.5
OTC	6.75	3.50	Network Computing Devices (L)	3.63	-0.06	-1.7
NYS	11.13	7.00	Network Equipment Tech.	10.00	1.50	17.6
OTC	23.50	9.75	Network General	15.88	-0.50	-3.1
OTC	9.63	6.38	Network Systems Corp	7.38	0.50	7.3
OTC	73.88	28.50	Newbridge Networks Corp	36.38	1.50	4.4
NYS	33.75	21.38	Northern Telecom Ltd	29.25	1.25	4.5
OTC	30.75	16.00	Novell Inc. (L)	16.63	0.13	0.8
NYS	48.88	33.25	Nynex Corp	36.88	0.63	1.7
OTC	30.00	16.00	Octel Communications Corp	16.00	1.00	5.8
OTC	18.25	9.00	Optical Data Systems Inc.	14.00	0.75	5.7
OTC	7.50	1.50	Penril DataComm Networks	3.50	-0.50	-12.5
OTC	27.25	10.00	PictureTel Corp	12.38	-0.13	-1.0
OTC	8.25	2.75	Proteon Inc	3.75	0.25	7.1
OTC	14.50	5.00	Racotek Inc.	6.50	-0.50	-5.6
NYS	38.88	24.88	Scientific Atlanta Inc.	33.25	-0.88	-2.9
NYS	47.00	36.75	Southwestern Bell Corp	43.50	0.50	1.2
NYS	40.25	31.38	Sprint Corp	34.75	-0.25	-0.7
OTC	26.75	13.38	Standard Microsystems Corp.	24.75	0.00	0.0
OTC	23.75	11.38	StrataCom Inc	23.00	1.75	8.2
OTC	40.75	13.50	SynOptics Communications (L)	25.00	0.25	1.0
OTC	15.25	2.00	Telebit Corp	4.25	-1.25	-22.7
OTC	49.00	22.25	US Robotics	27.50	1.00	3.8
NYS	50.75	38.75	US West Inc.	42.63	0.88	2.1
OTC	43.88	19.38	Wellfleet Communications	20.38	-4.88	-19.3
OTC	28.25	12.25	Xircom	14.75	-0.50	-3.3
OTC	23.00	12.75	Xylogics Inc	17.63	0.50	2.2
OTC	30.00	12.25	Xyplex Inc.	12.88	-0.13	-1.0
PCs and Workstations						UP 4.1%
OTC	7.50	2.63	Advanced Logic Research	4.00	[illegible]	-6.6
OTC	45.25	22.00	Apple Computer Inc.	27.13	1.13	4.3
OTC	33.00	12.50	AST Research Inc	15.00	0.88	6.2
NYS	39.88	14.38	Compaq Computer Corp	34.38	1.75	5.4
OTC	30.75	13.50	Dell Computer Corp	27.44	2.39	8.7
OTC	25.00	9.25	Gateway 2000 Inc.	13.38	2.75	25.9
NYS	93.63	64.38	Hewlett-Packard Co	73.88	1.13	1.5
NYS	26.88	16.00	Silicon Graphics	23.13	0.25	1.1
OTC	31.38	18.25	Sun Microsystems Inc.	20.50	0.13	0.6
NYS	50.25	20.13	Tandy Corp	34.00	-0.50	-1.4
OTC	5.33	2.38	Zeos International Ltd	2.75	0.13	4.8
Large Systems						OFF [illegible]
ASE	7.88	4.38	Amdahl Corp	5.18	-0.13	2.3
NYS	7.63	3.63	Convex Computer	4.00	0.25	4.3
OTC	4.50	0.50	Cray Computer	1.00	0.00	0.0
NYS	33.75	19.13	Cray Research Inc.	21.13	3.13	5.1
NYS	10.25	6.63	Data General Corp.	7.93	0.13	1.7
NYS	[illegible]	18.25	Digital Equipment Corp	19.61	0.75	4.0
OTC	6.50	2.50	Encore Computer Corp.	4.06	0.06	1.6
NYS	52.25	37.63	Harris Corp	42.75	1.75	2.8
NYS	65.00	40.63	IBM	57.50	0.38	0.7
OTC	18.75	7.75	NetFrame	8.50	0.00	0.0
OTC	26.00	4.00	Parallan Computer	4.25	-0.88	-17.1
OTC	23.25	5.63	Pyramid Technology	6.00	0.13	2.1
OTC	20.00	11.33	Sequent Computer Sys.	12.25	-0.38	-2.9
OTC	6.84	3.75	Sequoia Systems Inc.	4.00	0.13	3.2
NYS	33.13	20.25	Stratus Computer Inc.	29.25	1.13	4.0
NYS	16.50	8.50	Tandem Computers Inc	11.88	0.50	4.4
OTC	30.00	4.75	TriCord Systems (L)	4.88	1.25	-20.4
NYS	16.50	8.63	Unisys Corp	9.13	-0.13	1.4
Software						OFF [illegible]
OTC	34.50	16.25	Adobe Systems Inc.	28.75	1.00	3.7
OTC	34.50	13.50	Aldus Corp.	26.50	1.13	4.4
OTC	8.50	4.50	American Software Inc.	4.88	0.00	0.0
OTC	15.75	5.25	Ask Computer Systems	13.13	0.13	1.0
OTC	61.25	37.00	Autodesk Inc.	49.13	1.08	2.2
OTC	4.50	2.00	Bachman Info. Systems	2.00	0.00	0.0
OTC	31.25	20.50	BGS Systems Inc.	25.50	0.50	2.0
OTC	71.00	41.25	BMC Software Inc	44.00	-0.13	-0.3
OTC	30.75	22.50	Boole & Babbage	25.50	0.00	0.0
OTC	22.50	8.50	Borland Int'l Inc.	11.13	0.75	7.2
OTC	25.00	6.75	Brock Control Systems Inc. (L)	7.50	0.25	3.4
OTC	4.93	2.38	CE Software	3.38	0.19	5.9
ASE	10.34	6.25	Cheyenne Software Inc.	8.38	-0.50	-5.6
OTC	14.25	7.38	Cognos Inc	10.13	-0.63	5.8
NYS	44.88	27.00	Computer Associates	41.00	0.88	2.2
NYS	5.38	2.13	Computervision Corp	3.75	0.00	0.0
OTC	48.25	21.00	Compuware Corp	42.25	0.25	0.6
OTC	14.00	9.00	Comshare Inc.	11.88	-0.50	-3.1
OTC	25.00	8.50	Corel Corp	18.63	1.38	8.0
OTC	7.50	3.38	Easel Corp	4.00	0.13	3.2
OTC	39.25	31.25	FileNet Corp	19.50	3.75	9.9
OTC	25.00	3.25	4th Dimension	3.75	-0.44	-11.9
OTC	12.50	6.13	Frame Technology	9.75	-0.88	8.2
OTC	13.00	7.00	Group 1 Software	11.13	-3.63	16.7
OTC	31.75	8.25	Gupta (L)	8.88	-0.88	-9.0
OTC	12.00	6.38	Hogan Systems Inc. (L)	6.88	-0.50	-7.6
OTC	29.50	16.00	IMRS	21.75	-0.25	-1.1
OTC	44.25	12.50	Information Resources	16.25	-0.50	3.4
OTC	25.75	14.25	Informix Corp	17.50	1.61	10.3
OTC	12.50	8.50	Intergraph Corp	10.25	1.38	14.1
OTC	8.75	3.00	Interleaf Inc. (L)	3.00	-0.69	-18.6
OTC	15.50	4.25	InterSolv Inc.	9.88	-0.50	3.7
OTC	50.00	27.00	Intuit Inc	34.25	0.61	[illegible]
OTC	18.75	3.25	KnowledgeWare Inc. (L)	4.75	2.25	-40.5
OTC	36.25	15.50	Legent Corp	21.25	4.25	16.7
OTC	80.50	50.25	Lotus Development	60.13	0.88	1.3
OTC	18.50	6.50	Magic Software Enterprises	8.75	1.58	22.2
OTC	18.50	6.00	Manugistics Group Inc.	8.00	0.25	3.2
OTC	8.00	3.63	MathSoft	6.25	0.00	0.0
OTC	13.25	4.50	McAfee Associates	7.00	-0.25	-3.4
OTC	17.25	8.38	Mentor Graphics	9.88	-0.50	-4.8
OTC	30.75	11.50	Micro Focus	15.88	0.38	2.4
OTC	11.63	4.75	Micrografx Inc.	6.00	0.75	11.1
OTC	56.63	35.19	Microsoft Corp	49.00	0.69	-1.4
OTC	38.75	22.88	Oracle Corp.	38.61	0.70	1.9
OTC	44.75	21.50	Parametric Technology	26.50	1.50	6.5
OTC	24.50	14.00	ParcPlace Systems Inc. (L)	10.50	0.00	0.0
OTC	41.38	26.00	PeopleSoft	32.50	2.00	6.6
OTC	6.25	3.50	Phoenix Technologies	4.50	0.00	0.0
OTC	69.50	24.25	Powersoft	51.50	3.00	6.2
OTC	10.75	3.50	Platinum Software	5.75	-0.61	8.8
OTC	14.25	7.25	Platinum Technology	13.00	0.50	4.0
OTC	60.25	27.00	Progress Software Corp.	29.13	-1.63	-5.3
OTC	4.13	1.94	Quarterdeck Office Sys.	2.38	-0.31	-11.6
OTC	32.00	11.25	Rainbow Technologies Inc	12.50	0.50	4.2
OTC	11.38	6.00	Rasterops	6.50	0.25	3.9
OTC	14.50	3.75	Ross Systems	7.25	0.88	13.8
OTC	28.75	3.00	Sapiens Int'l Corp. N.V.	6.38	-0.25	-3.8
OTC	14.63	9.75	Softkey International Inc.	17.50	-0.13	-1.0
OTC	8.63	3.25	Software Publishing Corp	6.00	0.13	2.1
OTC	13.75	3.00	State of the Art	7.00	1.00	16.7
NYS	35.63	18.75	Sterling Software Inc.	29.50	-0.75	-2.5
OTC	21.63	9.13	Structural Dynamics Research	9.88	0.13	1.3
OTC	57.00	25.75	Sybase Inc.	46.00	-3.00	-6.1
OTC	20.50	9.88	Symantec Corp	12.25	1.75	16.7
OTC	52.75	33.00	Synopsys	48.50	1.63	[illegible]
OTC	24.25	11.75	System Software Assoc.	13.75	0.00	0.0
OTC	6.75	3.13	[illegible] Corp.	3.38	-0.50	12.9
OTC	30.00	14.50	Viewlogic Systems	14.50	-0.25	-4.9
OTC	23.25	10.75	VMark Software Inc	[illegible]	-0.06	-0.6
OTC	13.25	5.50	Walker Interactive Systems	6.00	-0.25	-4.0
OTC	60.00	38.75	Wall Data Inc	41.88	1.88	4.7
Semiconductors						UP [illegible]
NYS	32.75	16.75	Advanced Micro Devices	26.88	1.13	4.4
NYS	31.13	19.11	Analog Devices Inc	29.75	0.25	0.8
OTC	29.63	10.94	Atmel Corp	26.13	2.38	10.0
OTC	7.50	3.63	Chips and Technologies	4.00	0.25	6.7
OTC	44.63	15.75	Cirrus Logic	32.88	1.94	6.3
NYS	18.88	11.25	Cypress Semiconductor Corp	17.75	1.38	8.4
NYS	20.13	11.00	Dallas Semiconductor	18.50	0.25	1.4
OTC	27.75	14.75	Integrated Silicon Systems	19.38	0.25	1.3
OTC	74.50	48.25	Intel Corp	58.50	1.25	2.1
NYS	28.00	13.00	LSI Logic Corp	28.00	2.88	11.4
OTC	26.75	12.25	Lattice Semiconductor	18.50	0.13	0.7
NYS	39.91	15.16	Micron Technology	37.25	3.00	8.8
NYS	54.88	41.81	Motorola Inc.	44.88	0.63	1.4
NYS	25.00	16.38	National Semiconductor	18.00	0.75	4.3
OTC	10.13	4.50	Sierra Semiconductor	8.25	0.00	0.0
NYS	99.50	55.75	Texas Instruments	93.50	3.63	4.5
OTC	18.88	9.38	VLSI Technology	14.25	0.63	4.6
OTC	14.38	3.38	Weitek	3.25	0.00	0.0
ASE	20.38	3.63	Western Digital Corp	13.88	0.88	6.7
OTC	59.25	30.25	Xilinx (L)	32.00	-0.38	-1.2
OTC	40.75	23.25	Zilog Inc	33.50	0.75	2.3
Peripherals and Subsystems						UP [illegible]
OTC	30.50	14.50	American Power Conversion	16.00	0.38	2.4
OTC	24.75	17.25	Banctec Inc	19.50	-0.50	-2.5
OTC	7.75	3.25	Cambex Corp	4.63	0.13	2.8
ASE	7.38	1.88	Cognitronics Corp	2.50	-0.25	-9.1
NYS	28.50	9.00	Conner Peripherals	12.75	0.38	3.0
OTC	19.63	8.75	Creative Technology Inc	18.50	1.10	6.3
OTC	15.25	4.75	Data Race Inc.	5.63	-0.13	-2.2
ASE	10.75	4.13	Dataram Corp	6.13	0.00	0.0
NYS	23.00	10.75	EMC Corp	13.75	0.00	0.0
OTC	8.25	3.13	Emulex Corp	6.75	0.13	1.9
OTC	21.00	13.25	Evans & Sutherland (L)	13.50	-0.50	-3.6
OTC	22.50	7.50	Exabyte	15.63	1.13	7.8
OTC	14.00	4.25	Intelligent Innov. Systems	5.13	-0.38	-6.8
OTC	4.50	2.00	Iomega Corp	2.25	0.00	0.0
OTC	9.75	3.23	IPL Systems Inc. (L)	3.25	0.50	13.3
OTC	28.50	13.75	Komag Inc.	19.88	1.63	8.9
OTC	8.63	4.38	Maxtor Corp	4.56	0.31	-6.4
OTC	8.25	4.88	Micropolis Corp.	5.50	0.38	-6.4
OTC	22.50	10.00	Pinnacle Micro Inc.	15.00	0.75	5.3
OTC	10.75	6.25	Printronix Inc.	10.75	1.50	16.2
NYS	11.75	7.00	QMS Inc. (L)	7.00	-0.25	-3.4
OTC	20.25	9.58	Quantum Corp.	14.50	1.50	11.5
OTC	9.13	3.63	Radius Inc	4.50	-0.38	-7.7
NYS	37.75	8.13	Recognition International	8.50	0.00	0.0
OTC	6.88	3.63	Rexon Inc	6.25	0.38	6.4
OTC	28.75	14.88	Seagate Technology	21.63	1.63	8.1
NYS	61.63	23.75	Storage Technology	34.38	1.13	3.4
NYS	33.38	21.38	Tektronix Inc	20.88	0.25	0.9
NYS	104.88	69.88	Xerox Corp	97.63	-0.38	-0.4
Services						OFF [illegible]
OTC	25.50	14.88	American Mgmt. Systems	21.88	-0.50	[illegible]
NYS	4.25	2.50	Anacomp Inc	2.75	-0.25	-8.3
OTC	21.50	16.50	Analysts Int'l	15.50	1.00	6.9
NYS	56.88	47.25	Auto Data Processing	52.50	1.00	1.9
OTC	18.25	8.25	Cambridge Tech. Partners	16.63	0.63	3.9
NYS	25.63	14.38	Ceridian Corp.	25.50	0.75	3.0
NYS	24.75	16.00	Comdisco Inc.	18.50	0.38	2.0
OTC	12.50	4.84	Computer Horizons	8.25	-0.25	-2.9
NYS	44.00	27.25	Computer Sciences	42.75	0.88	2.1
NYS	9.75	6.00	Computer Task Group	8.50	0.00	0.0
NYS	32.38	8.38	CompUSA Inc	9.00	0.00	0.0
OTC	13.50	7.75	Control Data Systems Inc.	8.25	0.25	2.9
OTC	11.00	6.63	Egghead Discount Software	7.25	0.06	0.9
NYS	50.00	26.00	General Motors C (EDS)	36.00	0.25	0.7
OTC	27.75	7.50	Inacom Corp	7.75	-0.88	-10.3
OTC	28.00	13.61	Intelligent Electronics	16.00	0.63	4.1
OTC	27.50	6.00	Merisel	9.13	0.38	4.3
OTC	32.50	8.66	Microage Inc.	16.75	0.50	3.2
OTC	40.50	27.16	Paychex	29.25	0.25	0.8
NYS	39.25	21.63	Policy Management Sys	31.75	-0.88	-2.7
NYS	25.50	18.63	Reynolds and Reynolds	23.00	-0.13	-0.5
OTC	28.50	14.25	SEI Corp	18.50	0.00	0.0
OTC	29.50	17.50	Shared Medical Systems	21.88	-0.13	-0.6
OTC	33.00	5.63	SHL Systemhouse	[illegible]	[illegible]	[illegible]
OTC	30.75	9.25	Software Spectrum Inc.	11.75	0.25	2.2
OTC	47.75	31.50	Sungard Data Systems	37.50	1.00	2.7

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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CC:Mail

CONTINUED FROM PAGE 1

services and offer a migration path for current IBM host-based Professional Office System and OfficeVision customers.

In addition, the server — which will run on OS/2 or AS/400 hardware and store messages and directory information in DB2 databases — may especially appeal to AS/400 customers who have been notably neglected by leading LAN messaging vendors such as Lotus and Microsoft Corp., analysts said.

IBM began promoting CC:Mail as a key part of its PC LAN strategy, after its own OfficeVision LAN strategy failed.

With its messaging strategy in place, IBM will directly compete with CC:Mail and will halt its 5-year-old policy of proactively marketing CC:Mail systems. However, IBM will continue to resell Lotus' Notes and its OS/2 SmartSuite, which includes a CC:Mail client. For its customers who have the CC:Mail client, IBM will offer to attach the client to the IBM server, according to Richard Sullivan, director of workgroup solutions at IBM's Software Solutions division.

No policy change

Lotus denied there was any shift in the IBM policy toward CC:Mail. It said it expects IBM to continue to resell CC:Mail, including desktop and back-end software, as well as Notes and SmartSuite.

Several IBM hardware customers contacted last week said they were intrigued by an IBM client/server messaging offering but skeptical about the company's ability to deliver a compelling product in an increasingly crowded market. Even if IBM can deliver, users said, it may well be too late.

"That would have been nice had it been available in May 1993 when we chose our messaging system," said Joe Waynick, assistant vice president of technical support at Union Bank in Monterey Park, Calif. "But we can't make a decision based on promises, and IBM is known for making promises [and] then pulling the plug and leaving you twisting in the wind."

What's the deal?

While it is busy developing its own messaging software for OS/2 and OS/400, IBM penned a deal recently with Hewlett-Packard Co. that allows it to resell HP's OpenMail on the RS/6000.

The revamped messaging line is meant to compete with LAN leaders, including Lotus, Microsoft, Novell, Inc. and others (see chart). By the fourth quarter, IBM will integrate the new messaging product with its Visual Document Library document management, FlowMark workflow management, Time and Place/2 calendaring and Personal AS/2 decision-support programs, according to Sullivan [CW, May 23].

If this sounds remarkably similar to IBM's late-1980s OfficeVision plan for PC LANs — which never materialized — that is because it is.

"We learned a lot going through that experience," Sullivan said. "We effectively described a solution in 1989 that met a market requirement, [but] we weren't able to deliver." This time is different because the LAN-based client/server technologies to support the strategy are in place, and IBM already has announced components such as workflow and scheduling, he added.

Client/server messaging myriad

Product	Server platform	Pro	Con	Availability
Lotus Communications Server	OS/2, Windows NT, Solaris 2, HP/UX, AIX, NetWare Loadable Module (NLM)	Tight integration of CC:Mail, Notes and SoftSwitch	Challenge integrating the pieces	First half of 1995*
Microsoft Exchange	NT	Windows 4.0 integration, single in-box for fax, mail and voice	Limited to NT servers	First half of 1995*
Hewlett-Packard HP OpenMail	HP/UX	Robust server that runs popular clients such as CC:Mail	Scant market awareness	Now
Novell/ WordPerfect Open Messaging Environment	NLM, OS/2, NT, seven kinds of Unix	Tight integration with network operating systems and directory services	Long wait for users	Second half of 1995*
IBM AnyMail/ UltiMail combo	OS/2, AS/400	AS/400 and DB2 support	Late start and history of desktop flops	Fall 1994*

*Estimate

Source: Rapport Communications, Takoma Park, Md.

Even so, users said some of the existing pieces fall short in places where competitors are strongest, such as the user interface.

For instance, Tom Cox, director of information support at Carolina Electric Cooperatives, a major IBM shop in Raleigh, N.C., looked at Time and Place/2 because it has strong back-end functionality.

"But they can put functionality out the ying-yang. Unless I see major changes in the front end, I can't sell it to our users," Cox said. Because the utility already uses Lotus applications on the desktop and CC:Mail for messaging, Cox said it would not move to IBM's strategy unless it integrates with the Lotus desktop.

Overall, Cox said it is a mistake for IBM to drop CC:Mail but added that it is easy enough for him to get support from local systems integrators.

For Mr. Coffee, Inc. in Bedford Heights, Ohio, a messaging server based on DB2 could be appealing, said Rick Boettcher, director of information systems. The company has customer, sales and product availability information in DB2 databases on the AS/400. Integrating messaging into the same system could help improve tracking of electronic communications with customers and sales representatives who use Windows-based notebooks, he said.

Try, try again

As part of a renewed attempt to break into the client/server office automation market, IBM will begin rolling out a revamped messaging line this fall.

The components, which are based on the current TCP/IP-based UltiMail messaging client for OS/2 and the AnyMail multimedia messaging server, will be delivered in two phases.

Slated for mid- to late 1994:

- AnyMail server support for SNA Distribution Services, Simple Mail Transport Protocol and LAN-to-LAN local routing over the popular LAN protocols.
- Robust message storing, in which messages are stored in a distributed, relational DB2 database.
- UltiMail client support for Microsoft's Messaging Application Programming Interface, the Vendor Independent Messaging and the Common Messaging Calls, so that any applications written to those interfaces can be mail-enabled via UltiMail.
- UltiMail client on Windows 3.1 and Windows for Workgroups.
- Integration of various components, such as messaging and calendaring, thereby allowing users to access several programs using the same interface and log-on procedure.

Slated for delivery in mid- to late 1995:

- Additional client support for the PowerPC and others.
- RS/6000 server support with X.400 message transport.

—Lynda Radosevich

NetWare hits setback in RISC-y move

By Elisabeth Horwitt

Novell, Inc.'s Processor-Independent NetWare (PIN) strategy, which promised to put RISC power into NetWare, is now approximately a year behind schedule. It also just lost one of its major platforms: Hewlett-Packard Co.'s PA-RISC.

HP was originally slated to ship the first PIN implementation in the first quarter, but it has discontinued development of the PA-RISC version — partly because Novell was unable to deliver the PIN code on schedule. PIN, which is based on NetWare 4.1, got bogged down in the same morass of delays that afflicted the new version. Both products are scheduled to ship by year's end.

At the high end

HP is now planning to implement native NetWare 4.1 on its Intel Corp.-based NetServer platform, leaving HP/UX as its high-end Unix server platform, a company spokesman said.

Novell and HP said they plan to implement NetWare on the chip HP is currently codeveloping with Intel, which will support both Intel and RISC-based systems. However, that chip is not slated to ship for several years.

Both the delays and HP's cancellation are "a major disappointment," said Mitchell Steveiman, vice president of information systems at Universal Trust Co., a Clifton, N.J., financial firm. "When you can run NetWare on any CPU, without having to go crazy with recompiling or writing code, we'll all be happy campers."

The PA-RISC version of PIN was "one of our prime choices" for upgrading off a Intel Pentium-based NetWare platform, Steveiman said.

Apple Computer, Inc. is planning to ship a PowerPC version of PIN NetWare by early next year. The two remaining PIN implementors, Digital Equipment Corp. and Sun Microsystems Inc., still have not given time frames for commercial release of their PIN products.

Novell plans to merge the NetWare release that follows Version 4.1 with PIN. This will make future hardware ports easier and enable NetWare Loadable Modules (NLM) to run natively on any PIN platform, a Novell spokeswoman said. However, the next version of NetWare is at least a year away, she added, declining to be more specific.

The initial version of PIN will be based on, but separate from, NetWare 4.1. That will require independent software vendors to recompile their NLMs to run on each new platform.

Wysiwyg

What is the STRANGEST promotion you have seen at a computer trade show?

"A water bed used to promote mainframes at a show in the 1970s. People could have their picture taken with a model by the side of the bed."

—Bill Goodhew
President, Peachtree Software
Norcross, Ga.

"Some company put a lady in a leotard suspended from the ceiling. She performed a series of exercises with barbells throughout the show. Most of the people who were there can remember the lady — but neither the company nor the product she represented."

—Joseph Alsop
President, Progress Software, Bedford, Mass.

"A vendor was handing out spongy, neon hammers with the slogan, 'We hammer the competition.'"

—Sheila Havran
MIS manager, Hadco Corp.
Salem, N.H.

"At a terminal seller's booth. A VT100 had its CRT replaced with a fish tank and live tropical fish, and a sign saying, 'A better use for your VT100.'"

—Phil Jamieson
President, Software Partners/32, Inc.
Topsfield, Mass.

If you had your way, what would your least favorite computer acronyms stand for? Let us know. Contact Tim Ouellette at (800) 343-6474 ext. 215 or MCI Mail, 686-4778. If we use your item, we will give you a gift, but please leave your contact information.

Compiled by Tim Ouellette; illustrations by Merle Nacht

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Inside Lines

Kiss and make up

After four months of delay, Microsoft and Digital are finally ready to offer a peek at their Common Object Model (COM) specification to a select industry audience. COM enables interoperability between Microsoft's Object Linking and Embedding (OLE) and Digital's Object Broker implementation of the Object Management Group's Common Object Request Broker Architecture. Microsoft officials were startled by Digital's recent embrace of Next Computer's OpenStep object technology last month, but they now seem reassured enough to move forward with the project, internal sources said.

Former ASKers didn't receive

Health coverage for same-sex domestic partners was a major sticking point for at least some ASK engineers who quit when Computer Associates' takeover of ASK became official recently. The database vendor provided it; CA will not. The issue came up at CA's first employee meeting with ASK two months ago, according to one insider. "Someone asked that question of CA, and the answer was clearly 'no.' You could hear a pin drop in the room," the ASK employee said. For its part, CA says it has been more than fair with severance packages and benefits for departing ASK employees.

New life for Rdb?

Amid rumors that Digital plans to sell its Rdb database, resellers and distributors last week said the company is not only field-testing the relational database for OSF/1 but will have a Microsoft Windows NT beta out this winter. In other Digital scuttlebutt, three players are vying for its $80 million Learning Services business, which includes customer and employee training, according to a Digital user group source. "They've been shrinking the instructor force dramatically," the source said. A nearby center "went from seven classrooms and a dozen instructors to two and two."

Beta tools for NT

Microsoft has at least two systems management tools in the works for Windows NT, according to one beta tester. The first, code-named Bloodhound, is a packet analyzer along the lines of Novell's Lanalyzer. "When it's up and running, it gets more information better than any product on the market, but it's conspicuously unstable," the source said. "It will crash in a heartbeat with no warning." The second is a server management tool code-named Nexis. The software allows users to manage the 32-bit NT operating system from a 16-bit workstation.

Yakety yak, IBM talks back

IBM is talking to major accounts about its October PC hardware shift, which one customer says will include a move back to the one-name-fits-all strategy used for the original PC and the PS/2. The customer, who asked not to be named, said IBM has not talked about a name for the brand but refers instead to a "convertible" systems strategy accompanied by a build-to-order model that resembles Dell Computer's. The strategy centers on a universal motherboard, with user-specified processor, controller, local bus and other components. IBM will also establish standard configurations for accounts that request them.

After firing off an angry letter to Oracle chief Larry Ellison about waning attention from the database maker, the leader of the New York Oracle Users Group picked up his ringing phone one day. "I just heard laughing at the other end," said Carl Esposito. The chuckler turned out to be Charles Wang, CEO of Computer Associates. "He read that we were having trouble with Oracle and offered to come to our next meeting to tell us about how a user group should be treated." If you have any advice, news items or tips to offer us at Computerworld, do get in touch with our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8178, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.

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BILL BLAUSTEIN

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KPMG

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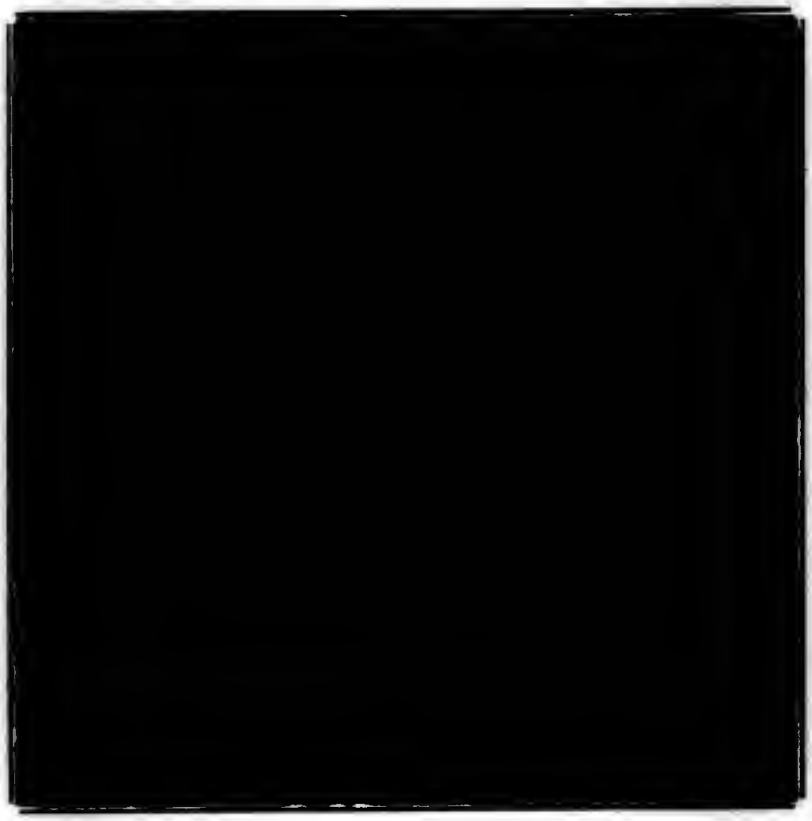

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